Animal Feedlot Regulation

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Members
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In recent years, animal feedlots have become increasingly controversial in Minnesota as the number of large feedlots has grown significantly. Citizens have raised concerns about the impact of feedlots on both air and water quality. The Legislature has taken a number of steps in recent years to address concerns about feedlots but has also seen the need for further study of the controversial and sometimes technical issues involving feedlots.

In April 1998, the Legislative Audit Commission directed us to evaluate the environmental regulation of feedlots by the Minnesota Pollution Control Agency (MPCA) and the counties participating in MPCA's feedlot program. Our report finds a number of problems with MPCA's regulatory efforts. They include insufficient site visits to assess the adequacy of proposed feedlot sites and construction work, weaknesses in the oversight of existing feedlots, and the lack of a realistic and cost-effective strategy for addressing water pollution problems at small open lot facilities. MPCA has become more responsive to citizen complaints about odors, but the effectiveness of its hydrogen sulfide compliance program could be affected by the lack of clear guidance from research and experience on how best to control feedlot emissions.

The quality and comprehensiveness of county programs vary considerably. Some county programs are excellent while others are inadequate. Counties can be valuable partners for MPCA, but the agency needs to provide clear program expectations for counties and perform better oversight of counties.

This report was researched and written by John Yunker (project manager), David Chein, and Jennifer Moenck Feige. We appreciate the cooperation we received from MPCA, county governments, and others with an interest in feedlot regulation.

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MINNESOTA OFFICE OF THE LEGISLATIVE AUDITOR

Animal Feedlot Regulation

SUMMARY

This report examines the environmental regulation of animal feedlots.

During the 1990s, Minnesota has experienced a significant growth in the number of large animal feedlots, particularly swine facilities. There has also been an increasing tendency for owners of large feedlots to live offsite. Neighbors of these facilities have become increasingly concerned about the potential environmental impacts of animal feedlots on the air they breathe, the water they drink, and the lakes and streams they use for recreational purposes. Concerns have also been raised about the economic impact of large feedlots on existing producers.

As a result of the growing controversy over feedlots, the 1998 Legislature authorized the preparation of a generic environmental impact statement (GEIS) by the Environmental Quality Board. The GEIS will examine the long-term effects of the livestock industry on Minnesota's environment and economy. Because the GEIS is expected to take at least two years to complete, the Legislative Audit Commission directed our office to conduct a shorter and more focused study of animal feedlots. Our evaluation focuses on the adequacy of the environmental regulation of feedlots by the Minnesota Pollution Control Agency (MPCA) and the counties that have chosen to participate in the feedlot regulation program. In particular, our evaluation addresses the following issues:

- **Does MPCA review feedlot permit applications in a thorough and timely manner? Does MPCA conduct appropriate inspections of feedlots prior to issuing permits and during construction?**

- **Do MPCA and counties provide adequate oversight of feedlots on an ongoing basis, including taking appropriate actions to ensure that feedlots, when closed, are not pollution hazards?**

- **Does MPCA adequately analyze pollution risks for large feedlots that require preparation of an environmental assessment worksheet (EAW)?**

- **Does MPCA adequately respond to complaints about feedlot pollution and adequately enforce existing laws, rules, and permit conditions?**

- **What are the strengths and weaknesses of county feedlot programs? Does MPCA provide sufficient oversight of county feedlot programs?**

- **What are the deficiencies in MPCA's current administrative rules regulating feedlots and will MPCA's proposed rules adequately address the problems?**

- **Do MPCA and the counties have adequate resources to operate feedlot regulatory programs? If additional resources became available, where should they be targeted?**

In conducting this study, we interviewed MPCA management and staff, county regulatory staff, other state and local agency staff, livestock producers, environmental groups, concerned citizens, and other state and national experts. We reviewed MPCA permit, enforcement, and environmental review files in detail. We surveyed county regulatory officials and personally visited with some of them. We also reviewed existing reports and literature on feedlot pollution and regulation and examined information on the regulatory activities of other states. Finally, we visited feedlots in rural Minnesota to see firsthand the steps being taken to address water and air pollution concerns.

Overall, we found that MPCA's feedlot program has several strengths, including the design standards applied to new or expanded feedlots, the monitoring of water quality at certain large feedlots, and the relatively new monitoring of air quality. However, the program also has numerous weaknesses. These weaknesses include a lack of timeliness in reviewing and approving permit applications, insufficient review of some permit applications, limited follow-up on expired interim permits, insufficient resources devoted to visiting sites prior to permit approval or during construction, insufficient oversight of feedlots once they are in operation except in response to complaints, poor tracking of staff responses to citizen complaints, a weak but improving enforcement program, little or no meaningful oversight of delegated county feedlot programs, and the failure to update rules since the late 1970s.

BACKGROUND

Minnesota is among the top five states in turkey, hog, and milk production.

The livestock industry is a significant component of the state's agricultural economy. Livestock and related products such as milk and eggs bring in almost as much cash revenue as crop production in Minnesota. In 1997, cash receipts from the livestock industry totaled $4.1 billion, with the dairy sector accounting for 30 percent of cash revenue. Other large components of the industry include hogs (29 percent), cattle and calves (24 percent), and poultry and eggs (15 percent). Turkeys dominate the poultry and egg sector, accounting for more than 60 percent of poultry and egg cash receipts.

Minnesota ranks high nationally in a number of livestock categories. Minnesota is the second highest among the 50 states in turkey production after North Carolina. Minnesota trails only Iowa and North Carolina in the number of hogs and pigs. In terms of the number of milk cows and milk production, Minnesota ranks fifth among the 50 states. Minnesota is also third in cheese production, fifth in butter production, fifth in ice cream production, and ninth in egg production.

MPCA is the principal agency responsible for regulating animal feedlots in Minnesota. A feedlot is any lot, building, or combination of lots and buildings in which animals are confined and manure may accumulate. State officials do not know exactly how many feedlots there are in Minnesota. In 1997, MPCA estimated that Minnesota had about 45,000 farms with animal feedlots, but there are probably fewer feedlots today.

The main purpose of feedlot regulation is to protect Minnesota citizens from pollution caused by animal manure. Manure is a valuable resource that can provide beneficial nutrients to the soil and thus help in the production of crops. However—if improperly stored, transported, or disposed—manure may pollute lakes and streams or drinking water sources. Manure can also produce unpleasant and annoying odors and emissions, possibly affecting the health of nearby residents. In addition, emissions from manure may contribute to acid rain and greenhouse gas effects.

Both MPCA and some counties regulate feedlots.

MPCA's regulation of feedlots takes many forms. The agency requires any feedlot owner with 50 or more animal units to apply for a feedlot permit if a new feedlot is proposed, an existing feedlot is expanded or its operation is changed, or the ownership of a feedlot is changed.[1] MPCA is also responsible for adopting rules on feedlots, conducting environmental reviews of large feedlots, overseeing compliance with feedlot rules and permit conditions, investigating complaints about feedlots, and taking enforcement action against feedlot owners who violate state pollution laws, agency rules, or permit conditions. Funding for feedlot regulation by MPCA for the 1998-99 biennium was $3.2 million. The base level of staffing for feedlot regulation is 24 full-time equivalent positions, which includes 15 staff in MPCA's St. Paul office, 5 staff in regional offices around the state, and 4 vacant positions. This base level does not include MPCA managers or environmental review staff.

Minnesota law allows MPCA to delegate some of its feedlot regulation responsibilities to counties. To become a delegated county, the county board must pass a resolution stating that it assumes responsibility for processing permit applications, accompanied by a statement describing permitting procedures. It must also receive written approval from MPCA and appoint a county feedlot officer who is responsible for distributing feedlot permit application forms, helping farmers complete the applications, inspecting feedlots to ensure that they comply with agency rules and local feedlot ordinances, and maintaining feedlot permit records. In 1998, 47 counties had delegation agreements with MPCA. Counties received $2.1 million in state aid for feedlot regulation in the 1998-99 biennium.

1 Within shoreland areas, a permit is required under similar circumstances for feedlots with more than ten animal units. An "animal unit" is a measure that attempts to rate animals based on the volume and nutrient content of the manure they produce. For example, a mature dairy cow is considered to be 1.4 animal units, a slaughter steer or heifer is 1.0 animal unit, a hog over 55 pounds is 0.4 animal units, a hog under 55 pounds is 0.05 animal units, a turkey is 0.018 animal units, and a chicken is 0.01 animal units.

A delegated county does not issue all of the permits for feedlots within its county boundaries. Delegated counties are responsible for issuing permits for feedlots with less than 300 animal units, provided that all potential pollution hazards at these feedlots have been corrected, and for feedlots between 300 and 1,000 animal units that do not have a potential pollution hazard. The county must forward all other feedlot permit applications to MPCA.

PERMITTING

Most of the permits MPCA issues are either "interim permits" or "certificates of compliance." An interim permit is issued for new construction or for a feedlot that poses a potential pollution hazard to the environment. An interim permit expires after ten months and should be replaced with a certificate of compliance once construction has been completed satisfactorily or corrective action has been taken to eliminate the pollution hazard. A certificate of compliance has no expiration date and indicates that a feedlot meets agency standards. MPCA also issues National Pollution Discharge Elimination System (NPDES) permits to certain large feedlots (over 1,000 animal units) that have the potential to discharge to waters of the state. Roughly 16,000 feedlots in the state have state or county feedlot permits, and about 23 of these are NPDES permits. Currently, MPCA charges permit fees only for NPDES permits.

Current MPCA design standards for manure storage structures appear adequate.

Before MPCA issues permits, the agency usually reviews plans and specifications for all proposed manure storage structures to ensure that the structures are designed in a manner that will not degrade ground or surface water quality. In general, we found that:

- **MPCA has adequate design standards for structures that store manure.**

For example, MPCA's design standards for earthen basins tend to be more stringent than those in other states. Additionally, MPCA has guidelines for the construction of concrete pits that help to minimize the chance that these structures will leak or collapse. MPCA is monitoring about a dozen earthen basins that have been constructed since the agency toughened its standards in 1993 to gather information on the long-term adequacy of these basins. MPCA is also considering alternative ways of addressing concerns about potential leakage from unlined earthen basins installed before the standards were changed.

Plans and specifications for proposed manure storage systems are just one piece of information submitted with a feedlot permit application. Applicants must also provide information on proposed construction, site location, and manure management. Based on a random sample of permits we reviewed, we found that:

- **MPCA staff review permit applications and document their review in an inconsistent manner.**

For example, we found that some certificates of compliance were issued without MPCA receiving the necessary documentation required in the permits. Sometimes important documents had not been received such as a consulting engineer's certification that construction occurred in accordance with design specifications and permit requirements. We also found that often no written record of required karst reviews were on file for feedlots built in southeastern Minnesota's geologically sensitive karst region.

One particular area of concern is manure management plans. Current MPCA rules require feedlot permit applicants to submit a manure management plan that describes manure handling and application techniques and acreage available for manure application. MPCA uses this information to ensure that there are enough acres to spread the manure and that the method of spreading manure is appropriate. However, we found that:

- **Manure management information currently required by MPCA is inadequate.**

Manure management plans do not normally require a nutrient analysis of the manure generated or soil tests of the land on which manure will be applied. Manure nutrient analysis is essential to precise manure management since there can be wide variability in the nutrient value of manure. Without nutrient analysis, manure could be overapplied and could negatively affect the quality of ground or surface water. Soil analysis of phosphorus is particularly useful in certain environmentally sensitive locations to avoid excess application of phosphorus and potential negative impacts on surface water.

We also found that MPCA does not always verify the acreage information provided by the feedlot owner on the number of acres available for land application of manure. For example, we found discrepancies in some files between the number of acres the feedlot owner noted as available for land application of manure and the number available according to aerial photographs. The discrepancies sometimes were not noted in the permit files by MPCA staff.

MPCA needs to focus more attention on inspecting proposed feedlot sites and construction work.

Site inspections prior to construction are useful to verify information on the permit application and to evaluate the site's potential for pollution. For example, it is useful to inspect the site to gain a better understanding of the geological conditions and the presence of environmentally sensitive areas such as wells and sinkholes. Inspections during and after construction are useful to ensure that facilities, such as underground concrete pits, are constructed according to design specifications. We found that:

- **MPCA permitting staff do not normally conduct a site visit when they review a permit application or when a facility is being constructed.**

Eighteen percent of the permit files we reviewed contained evidence that MPCA conducted a site visit. MPCA staff told us that the agency has not normally conducted a site visit when reviewing a permit application. In the past, they have felt that their limited resources could be used more effectively to review construction plans, topographic maps, aerial photographs of the site, manure management plans, and information provided by the permit applicant to determine

whether the proposed feedlot poses a potential for environmental harm. If the permitting staff have concerns about the site, they may visit the site or ask someone from the regional office to visit the site. In lieu of site visits during and after construction, MPCA has sometimes relied on certification by a feedlot owner's consulting engineer that structures were built according to the specifications on file with the agency. However, these certifications have not been required or enforced on all permits.

We also found that MPCA does not regularly track how long it takes to issue an interim permit or certificate of compliance. Based on our review, MPCA took a median of 113 days to issue an interim permit and 61 days to issue a certificate of compliance. Although there are many reasons for delays in feedlot permit issuance, such as local opposition to the feedlot or incomplete application information, we believe that:

MPCA has had problems issuing permits in a timely manner and following up on expired permits.

- **The main cause of delay in issuing permits was the backlog of permits at MPCA.**

Our sample of permit applications suggests that it takes about one to two months between the time MPCA receives a complete application and the time an MPCA engineer begins to review the application.

MPCA typically issues interim permits for ten months, after which they expire. Once an applicant completes construction and provides verification to MPCA that the interim permit conditions have been satisfactorily met, MPCA can convert the interim permit to a certificate of compliance. We found that:

- **MPCA does not adequately follow up on expired interim permits.**

MPCA has several file cabinets full of interim permits, many of which have expired. Our sample of interim permits revealed that more than two-thirds had expired at some point. Nearly half had expired and to date had not been converted to certificates of compliance.

Overall, we found that because its staff is concentrated in St. Paul, MPCA has focused too many of its permitting efforts on reviewing engineering plans. Even though the agency has made efforts in recent years to inspect more facilities, we do not think that MPCA devotes sufficient attention to visiting feedlot sites prior to permit approval as well as during and after construction. Counties with the resources to do inspections have told us that field visits help ensure that the site is suitable for locating a feedlot and that manure storage facilities are constructed according to specifications. MPCA management also has told us that they would like to shift some of their emphasis from document reviews in St. Paul to more inspections of construction work. We recommend that:

- **MPCA should conduct more site visits prior to issuing feedlot permits, particularly for feedlots in environmentally sensitive areas.**

- **MPCA should conduct more site visits of feedlots during and after construction work, particularly when the feedlot is in an environmentally sensitive location or the construction involves contractors or engineers that MPCA is unfamiliar with or has had problems with on previous feedlot projects.**

- **MPCA should strive to provide a thorough review of all permit applications and ensure that required documents are filed with the agency in a timely manner.**

- **MPCA should develop a tracking system to make sure that feedlot owners follow through on permit requirements and should notify feedlot owners with expired interim permits and consider appropriate actions.**

- **MPCA should track the timeliness of its performance in issuing feedlot permits and strive to reduce its permitting backlog and the time producers wait for their applications to be reviewed.**

ENVIRONMENTAL REVIEW

Another important function performed by MPCA and sometimes by counties is the environmental review of certain proposed feedlots. According to rules established by the Minnesota Environmental Quality Board (EQB), an environmental assessment worksheet (EAW) must be prepared for any proposed new total confinement feedlot with a capacity of 2,000 or more animal units or an expansion of an existing total confinement feedlot resulting in an increase in capacity of 2,000 or more animal units. For partial confinement facilities, an increase in capacity of 1,000 or more animal units requires an EAW.

In the last year, MPCA has improved its environmental review of feedlots, although it has had problems dealing with an increased workload.

An EAW may also be prepared for a smaller project if the governmental unit responsible for permitting the facility decides that the project, because of its nature or location, may have the potential for significant environmental effects. The responsible governmental unit, which may be either MPCA or a county, may make this decision based on its own knowledge or upon evidence presented to it in a petition signed by at least 25 citizens.

During calendar year 1998, MPCA experienced a dramatic increase in its environmental review workload. The number of environmental assessment worksheets assigned to MPCA grew from an annual average of 10 for the period 1995-97 to 22 in 1998. There has also been an increase in the number of citizen petitions for EAWs assigned to MPCA. As of the middle of October, the number of petitions had grown from an annual average of 8 in 1996 and 1997 to 12 in 1998. The result of the dramatic growth in MPCA's environmental review workload has been an increase in the time it takes MPCA to complete a routine EAW, from about three to four months to five to nine months. MPCA's ability to promptly respond to citizen petitions has also been affected.

We reviewed a sample of EAWs done by MPCA and a number of citizen petitions decided by MPCA. Overall, we think that:

- **MPCA has improved its environmental review of feedlot projects.**

This improvement has largely occurred in the last year as MPCA has become more knowledgeable about hydrogen sulfide and ammonia emissions from feedlots. As a result, the agency has been able to more effectively respond to citizen concerns about odors.

Public input has been an important factor in the environmental review process.

In general, we think that the environmental review process has been useful in providing needed citizen input into MPCA's permitting and regulatory practices. Environmental review has resulted in MPCA imposing special permit conditions on particular feedlots when citizen input or other information has demonstrated the environmental need for such conditions. The process has also helped bring about changes in how MPCA handles permits for other facilities not undergoing environmental review.

There has been some dissatisfaction with EQB's "connected action rule" that requires multi-site feedlot projects to undergo a mandatory EAW if their combined increase in animal units exceeds 2,000 for total confinement projects or 1,000 for partial confinement projects. The rule may cause two "connected" sites to undergo an environmental review even though the sites are far enough apart that their environmental impacts are not cumulative. In response to such concerns, the 1998 Legislature directed the EQB to reconsider its connected action rule as it pertains to feedlots and to propose changes in the rule if appropriate. The EQB has drafted a proposed rule change that would eliminate the connected action provision for feedlots but instead lower the increase in capacity triggering a mandatory EAW for a total confinement facility from 2,000 to 1,000 animal units. The proposal would also require a mandatory EAW for new or expanding feedlots of any size in certain environmentally sensitive areas.

Increasing the number of feedlots undergoing environmental review may not be the highest priority.

We are concerned that the proposed rule could increase MPCA's environmental review workload. MPCA had difficulties coping with an increased workload in 1998 and had estimated that the EQB rule change would increase the number of EAWs by 10 to 15 per year. The proposed rule change could require MPCA to shift more resources to environmental review activities unless market conditions cause fewer large feedlot expansions to be proposed or the livestock industry downscales expansion plans to under 1,000 animal units to avoid mandatory EAWs. While we are supportive of the environmental review process, we are also aware of the many other needed improvements in feedlot regulation such as increased site visits, more timely enforcement actions, and increased review of manure management practices. We think that these improvements, if implemented, have the potential to affect more feedlots than environmental review is likely to affect and thus should be given higher priority than increasing the number of EAWs conducted by MPCA. We recommend that:

- **The Legislature should review the need for, and the potential cost of, the Environmental Quality Board's proposed rule on the environmental review of feedlots.**

OVERSIGHT

Feedlot regulation should not focus entirely on the issuance of permits. There is a need for ongoing oversight of permitted facilities and scrutiny of unpermitted feedlots as well. A detailed feedlot inventory can help identify facilities needing permits as well as facilities with previously unknown pollution problems. In addition, a regulatory agency should periodically inspect all permitted facilities on an ongoing basis to ensure that facilities are being operated in accordance with the permits and that pollution problems are not occurring. It is also important for a regulatory agency to ensure that appropriate steps are taken to protect the environment from water pollution when a feedlot closes and is no longer in operation.

There are weaknesses in the oversight of permitted feedlots.

We found that there are significant deficiencies in MPCA's oversight of feedlots on an ongoing basis. For example:

- **There is no statewide inventory of feedlots.**

Only a limited number of counties have done detailed feedlot inventories enabling them to identify where pollution problems exist. MPCA does not attempt to identify feedlots needing permits that have failed to apply for and obtain them. In addition, due to staffing constraints:

- **MPCA does not conduct periodic inspections of feedlots once they are in operation.**

A facility is likely to be inspected only if it is the subject of a complaint or enforcement action. We also found that:

- **MPCA has no way to track when feedlots are closed and has insufficient staff resources to check on whether closed feedlots are cleaned up in a timely manner.**

MPCA has not kept adequate records of water quality complaints.

As part of an effective regulatory program, MPCA must ensure that its rules and regulations are followed by feedlot owners. Because it does not do routine inspections of feedlots, MPCA relies primarily on the public to inform the agency when a producer violates feedlot rules or engages in practices that endanger the environment. When it receives a complaint that a producer may have violated environmental laws, feedlot rules, or permit requirements, MPCA generally investigates the complaint. If it finds that the complaint is valid and a pollution hazard exists, MPCA considers taking steps to ensure that the feedlot owner corrects the problem and minimizes the threat of pollution. We found that:

- **MPCA does not adequately keep records of water quality complaints relating to feedlots, so we were unable to systematically analyze the agency's timeliness and thoroughness of complaint investigations.**

MPCA has improved its enforcement efforts but still has problems completing enforcement cases in a timely manner.

In some cases, MPCA also pursues sanctions against violators. Enforcement is important both to correct the immediate environmental threat and to deter the violator and other feedlot owners from committing future violations. MPCA has several enforcement tools at its disposal, including a notice of violation, an administrative order, an administrative penalty order, a stipulated settlement, a civil court action, and criminal prosecution. We found that:

- **MPCA has taken several significant enforcement actions that have resulted in penalizing feedlot owners and correcting conditions and practices that posed a threat to water quality.**

However,

- **MPCA takes a long time to complete enforcement actions, and some uncooperative feedlot owners have been able to avoid enforcement for several years.**

For the most part, MPCA relies on its regional staff to pursue enforcement action when warranted. We found that some regional staff are more aggressive in pursuing enforcement actions while others generally choose not to pursue enforcement. At least one regional office has not been undertaking enforcement efforts involving feedlots. As a result, enforcement caseloads are uneven and those staff with large caseloads have trouble keeping up, resulting in delays. We found other reasons for delays, including the reluctance of some county attorneys to file criminal charges and the reluctance of MPCA to take formal court action when feedlot owners fail to comply with their orders.

In response to a governor's budget proposal resulting from growing concerns about air pollutants emitted from feedlots, the 1997 Legislature required MPCA to develop a protocol for measuring hydrogen sulfide levels, monitor feedlots with suspected odor problems, and take appropriate actions to bring feedlots into compliance with hydrogen sulfide standards. Overall, we think that:

- **MPCA has developed a good initial program to respond to citizen complaints about feedlot odors.**

MPCA has done a good job monitoring hydrogen sulfide emissions, but research has not yet established how emissions can best be controlled.

As of September 1998, MPCA staff had monitored 82 feedlots and found 26 to have potential violations of the standard for hydrogen sulfide. MPCA is working with those facilities identified as having potential violations to identify corrective or preventive measures that will reduce hydrogen sulfide emissions and perhaps odor complaints as well. In contrast to its handling of water pollution complaints, MPCA has done a good job of documenting complaints about feedlot odors and air emissions over the last year. MPCA has also responded appropriately to complaints by monitoring air emissions in a generally timely manner. However:

- **MPCA's air quality monitoring and compliance program for feedlots will face a number of challenges as it attempts to develop a policy on what mitigation steps various types of feedlots need to follow.**

The basic challenge that MPCA faces is that research into feedlot emissions and odor control does not yet have the answers to many of the relevant questions, such as how well technologies will work under various conditions or how long particular remedies will last. Because of these and other uncertainties, MPCA must be careful not to order excessively costly remedies if less costly remedies are available. MPCA also needs to make sure that it prescribes remedies that address the true source of odors and emissions. Additional research efforts by MPCA and others are needed to achieve these goals.

To address the shortcomings in the oversight of existing feedlots, we recommend that:

- **The Legislature should carefully consider the need for additional county feedlot inventories along with the budget request it will receive for the Generic Environmental Impact Statement on Animal Agriculture.**

- **MPCA should require its staff to record all complaints received about feedlots and briefly document how each complaint was resolved.**

- **MPCA should require regular status reports from investigators to ensure that progress is being made on water quality enforcement cases.**

- **MPCA should assign more staff to water quality enforcement activities in order to reduce the backlog and speed up resolution of cases.**

- **MPCA should ensure that regional offices are consistent in their willingness to investigate potential water quality violations.**

COUNTY FEEDLOT PROGRAMS

Some counties have excellent regulatory programs, while others have inadequate programs.

MPCA's feedlot program depends on delegated counties to issue feedlot permits, oversee feedlot operations, and minimize environmental pollution from feedlots. Ideally, a good county feedlot program should have an inventory of feedlots in the county, know which feedlots pose environmental problems, and have a plan to address the pollution problems. County officials should also thoroughly review new and expanded feedlot permit applications and ensure that feedlots are constructed in accordance with MPCA rules and guidelines, local zoning ordinances, and sound engineering practices. We found that county programs vary considerably in the degree to which they are funded and have the desired regulatory practices in place. Counties also vary in the type and extent of environmental risks that result from their geographical and geological features. Minnesota has programs in some counties that are less than adequate and has programs in other counties that are exemplary and more advanced than MPCA's own regulatory efforts.

In particular, we found that:

- **Counties vary considerably in the amount of resources they devote to feedlot regulation. Only part of this variation is due to county differences in the number of feedlots.**

County feedlot budgets in 1998 ranged from $3,540 to $125,000. The number of full-time equivalent staff devoted to feedlot regulation in delegated counties ranged from 0 to 3. Sixteen counties reported that less than 0.5 FTE staff worked on feedlot regulation. Some of this variation is expected due to differences in the number of feedlots. However, there is also considerable variation among counties that have similar numbers of feedlots. We also found that:

- **Counties vary considerably in the level of feedlot inventory they have completed.**

There are three levels of feedlot inventories. A Level 1 inventory is the most basic, and indicates all sites where livestock are present. A Level 2 inventory identifies sites where a potential for pollution exists, and a Level 3 inventory identifies sites where an actual pollution hazard exists. Based on our survey of county feedlot officers and other information we received from MPCA, we estimate that about 51 of the state's 87 counties have completed or are working on a feedlot inventory. Thirteen counties have completed or are working on a Level 3 inventory, 28 have completed or are working on a Level 2 inventory, and 10 counties have completed or are working on a Level 1 inventory. We estimate that statewide, about 36 counties (including 6 delegated counties) do not have a feedlot inventory completed or in progress.

We also found that:

- **There are wide differences among delegated counties in the extent to which they visit proposed new feedlots, existing feedlots, or abandoned feedlots.**

Most delegated counties visit all proposed feedlots before construction of new facilities begins, but only one-third of the counties visit all feedlots during or after construction to ensure the facilities are built according to design specifications and are environmentally sound. Additionally, few counties do routine inspections of existing feedlots to ensure that they are operating in accordance with permit requirements and feedlot rules, and few counties visit abandoned feedlots to ensure that they are closed properly.

Better MPCA oversight of county programs is needed.

Although MPCA delegates authority to counties with feedlot programs, we found that:

- **MPCA has provided little oversight of county feedlot programs, although it has recently made efforts to require delegated counties to meet some minimal requirements as a condition of remaining in the feedlot program.**

Unless a county requests assistance, MPCA does little to check on the thoroughness of county site inspections and does not verify the information that counties submit on their county feedlot officer reports. In particular, MPCA does not appear to check whether counties are matching the state aid they receive with cash or in-kind contributions from non-state sources. Oversight is important because county programs can be affected by local politics, which may sometimes cause programs to lack necessary environmental safeguards.

There is also a need for improved training and technical assistance for counties. County feedlot officers expressed concern to us about the adequacy of training provided by MPCA. Only 30 percent of those responding to our survey of county feedlot officers thought that MPCA training was "good" or "very good." Some counties want better technical training, while others want more on-the-job training. We recommend that:

- **MPCA should provide more effective oversight of county feedlot programs. The agency should establish expectations and standards for county feedlot programs and ensure that counties are meeting their financial obligations set forth in law.**

- **MPCA should attempt to ensure that county feedlot officers receive adequate training.**

Despite our concerns about some county programs and MPCA's lack of oversight, we think that:

- **MPCA should encourage, and the Legislature should support, the participation of additional counties in the feedlot program.**

With adequate technical support and proper oversight, counties can provide a valuable regulatory service. County staff will always be located closer to regulated facilities than MPCA and thus be able to more efficiently visit the sites of proposed feedlots, check on construction, and follow up on complaints. Increasing the number of counties in the feedlot program would also help to reduce MPCA's permitting workload and enable the agency to improve its performance in a number of areas. Adding more counties would also leverage county funds and make it less costly to the state to improve feedlot regulation than appropriating funds for more MPCA staff.

MPCA needs to develop more cost-effective ways of reducing water pollution problems at small feedlots.

We have also noticed that, even in counties with good inventories and adequate regulatory budgets, it can often be difficult to get owners of small existing feedlots to correct potential water pollution problems. Owners of small facilities lack adequate resources and may not be able to borrow money at a reasonable interest rate. In addition, public funds available for assisting feedlot owners are limited. As a result, some counties do not even bring these feedlots to MPCA's attention, since MPCA will generally not accept anything less than a perfect solution in which the pollution potential is reduced to zero. An alternative approach in some cases might be for MPCA to accept a less than perfect, but more cost-effective, solution to pollution abatement. Such an approach could be more effective in reducing manure runoff from open lot feedlots than the current policy and should

probably be applied only to existing feedlots under 300 animal units due to restrictions in federal rules. Consequently, we recommend that:

- **The Legislature, MPCA, and other policy makers should consider alternative ways of reducing water pollution emanating from small existing feedlots, including the need for additional public funds as well as more cost-effective ways of achieving a reduction in water pollution.**

FEEDLOT RULES

One of the key reasons why there have been problems with animal feedlot regulation is that:

- **MPCA's administrative rules for feedlots are outdated.**

MPCA has been working to draft new feedlot rules since early 1995.

There are numerous problems with the existing rules, which have not been revised since 1978. They do not adequately address land application of manure, manure stockpiling, manure storage structures, and the proper closure of feedlots. In addition, the rules do not sufficiently spell out the responsibilities of counties in the delegated county program. The existing rules do not establish the responsibilities of consultant engineers working for feedlot owners in inspecting construction to make certain that work is done according to design specifications and MPCA permit requirements. The rules also fail to address feedlot siting issues such as whether new construction or expansion should be allowed in environmentally sensitive areas.

As a result of these and other concerns, MPCA began working on new feedlot rules in early 1995. Due to concerns that MPCA has taken too long to develop new rules, the 1998 Legislature set a deadline of June 1, 1999 for MPCA to adopt new rules. However:

- **It is unlikely that MPCA will meet the legislative deadline for completing the rulemaking process.**

As of mid-January 1999, MPCA staff had still not finished drafting rule changes. While the bulk of the drafting work is done, staff have yet to coordinate how some of sections of the draft affect others and they are still seeking comments from outside parties on the draft. The agency may be able to issue proposed rules by sometime in March 1999, but is unlikely to complete the rulemaking process until late in the year. Despite the length of time it will have taken to draft and adopt rule changes, we think that:

- **MPCA has put much thought and effort into the drafting process, has aggressively sought outside comments, and appears to be pursuing changes that will address many of the concerns we have about existing rules.**

MPCA is giving thought to streamlining the feedlot permit system.

We are hesitant to provide a more specific endorsement of MPCA's work at this time, since the drafts have changed over time and may continue to change. Furthermore, we do not know exactly what rules MPCA will propose and take to hearings. We have some concerns about the direction the drafts have taken. For example, we are concerned that some of the proposed permit requirements may create a large workload for MPCA which its resources are inadequate to handle. We are also concerned that proposed permitting changes, such as the elimination of interim permits and the use of "short form" permits, may not allow MPCA to assure that a site is appropriate for use as a feedlot or that the design complies with agency requirements. The agency believes these changes will help streamline the permitting system so that some resources can be moved from permit application and design review to inspection of construction work and existing feedlot operations. In addition, streamlining may help MPCA provide a more timely response to permit applicants. MPCA management thinks, and we tend to agree, that resources should be shifted from an area of relative strength to areas of weakness in its feedlot program. Our concern is that the draft rules, as well as MPCA's regulatory and staffing practices, need to be designed so as to minimize the environmental risks of reducing MPCA's review of permit applications. We think that there are still some important issues to be worked out.

MPCA RESOURCES

We think that there are two fundamental resource problems adversely affecting MPCA's performance:

- **Until recently, MPCA has not had enough staff working on feedlot regulation, and**

- **Too few of MPCA's feedlot staff are located outside of St. Paul.**

MPCA has not been able to perform its regulatory functions in a timely and thorough manner. The agency has been unable to keep up with its workload in permitting, enforcement, and environmental review. In addition, MPCA has not been sufficiently thorough in its review of permits and lacks an adequate presence in the field for the purpose of reviewing proposed feedlot sites, inspecting construction work, and overseeing existing feedlots. Furthermore, the agency needs to provide much better oversight of counties in the feedlot program. Finally, MPCA has not done a good job of tracking its own performance in responding to complaints or processing permits.

MPCA needs to have more of its feedlot staff in outstate offices.

Only about 25 percent of existing feedlot staff are located outside of St. Paul. MPCA's centralization makes it difficult for the agency to visit the sites of proposed new feedlots or feedlot expansions, inspect construction work, periodically visit existing facilities, and carry out its complaint handling and enforcement responsibilities. While MPCA has five to six feedlot staff located in regional offices around the state, attempting to manage these staff from St. Paul has been a cumbersome and inefficient arrangement.

In September 1998, MPCA management attempted to address some of these staffing and management concerns by assigning a new manager to bring focus and direction to feedlot regulation and temporarily reassigning eight full-time equivalent staff to feedlot related activities during fiscal year 1999. The agency also plans to use four vacant positions in the feedlot program to increase its staffing in MPCA offices outside of St. Paul.

In general, we think that:

- **MPCA can implement some of the recommendations in this report by using existing resources.**

MPCA can make some improvements using existing resources.

Even without increased resources, MPCA could do a better job of reviewing permit applications, tracking interim permits, tracking complaint investigations, managing enforcement cases, and providing a basic level of county program oversight. MPCA could also develop cost-effective strategies for addressing water pollution problems at small feedlots as well as policies for addressing hydrogen sulfide and other air emission problems.

In addition, the four vacant positions in the feedlot program could be used to increase the number of site visits conducted prior to issuing permits, during feedlot construction, or after feedlots are in operation. The positions could also be used for complaint investigations, enforcement activities, or technical assistance to feedlot owners who need to correct potential pollution hazards. MPCA could also consider moving some of its existing feedlot staff to decentralized locations to assist in these functions.

However, we also think that:

- **MPCA and counties will probably need additional resources to address certain problems in feedlot regulation.**

Other improvements may require additional resources.

The temporary reassignment of staff to feedlot activities is scheduled to end on June 30, 1999. Without additional resources, MPCA is unlikely to be able to monitor whether feedlots have been properly closed. The agency will also be unable to conduct periodic inspections of operating feedlots except by either selecting a small sample of feedlots for compliance reviews or focusing on a few watersheds each year. We also think that progress in identifying and addressing long-standing pollution problems with small feedlots could be slow. Some delegated counties have made progress in addressing pollution problems and MPCA may be able to develop strategies to help other delegated counties make progress. However, MPCA does not have the resources to effectively run programs in non-delegated counties or to take over programs in delegated counties that are not doing an adequate job.

A better way of addressing some of these concerns would be for MPCA to encourage more counties to participate in the feedlot program, have clear expectations about their responsibilities, and provide greater technical support and oversight. However, that approach will require additional funding for county programs, including more funding for detailed county feedlot inventories, technical assistance to feedlot owners, and possibly more financial assistance to

feedlot owners if policy makers want to speed up progress in addressing pollution problems.

We also find that:

- **It is difficult to assess how much of an increase in resources MPCA may need to improve its feedlot program.**

It is difficult to estimate how market forces may affect the agency's workload in the future. Declining hog prices, for example, could reduce the number of permit applications for new or expanded swine feedlots. In addition, regulatory changes being considered by MPCA and EQB or in the process of being implemented may affect MPCA's workload. MPCA's new feedlot rules might require the agency to issue new five-year renewable permits to all existing feedlots and EQB's proposed "connected action" rule may increase MPCA's environmental review workload. In addition, MPCA needs to meet legislative deadlines for issuing NPDES permits to existing feedlots with 1,000 or more animal units. On the other hand, MPCA is considering possible ways of streamlining its permitting system, and these changes may reduce the impact of other changes on the agency's workload. Finally, MPCA's future workload will depend on how many more counties choose to participate in the feedlot program. While increased participation may require more resources for MPCA oversight and technical assistance, it would also reduce MPCA resources devoted to issuing permits in the newly participating counties.

In addition to economic and regulatory uncertainties, it is difficult to quantify MPCA's staffing needs because the agency does not have data on the average amount of staff time needed to perform certain tasks such as permit review. Internally, MPCA staff have estimated that the feedlot program, including related functions such as environmental review and air quality monitoring, needs twice the current number of staff to adequately perform its duties. We are skeptical of such estimates because they are not based on workload estimates and the number of hours needed to complete major tasks. In our view:

- **If MPCA requests an appropriation for additional feedlot staff, it should provide the Legislature with detailed information on its estimated workload and the average amount of time it takes to complete major tasks.**

Alternative funding sources should be considered.

We also recommend that:

- **Before appropriating additional funds for more MPCA staff, the Legislature should consider whether funds from other MPCA activities could be permanently reallocated to feedlot regulation.**

MPCA has already temporarily reallocated staff from other programs to feedlot regulation. However, funding for some of those staff came from fees collected from non-feedlot facilities regulated by the agency. MPCA may not be able to

use these funds for feedlot regulation on a permanent basis. Nevertheless, MPCA and the Legislature should consider whether there are funds within the agency that could be permanently reallocated to feedlot regulation without impairing the programs currently receiving those funds.

If the Legislature determines that additional funding for feedlot staff is justified, it could consider using fee revenue as an alternative to general fund appropriations. Currently, the general taxpayer finances most of the cost of feedlot regulation. The only existing feedlot fees are for NPDES permits. Revenue from NPDES permit fees will be increasing as more feedlots are required to obtain an NPDES permit. These additional revenues and funds from new fees being considered by MPCA could be used to provide additional support for the feedlot regulation program. However, MPCA and the Legislature should consider the impact of a fee-based approach on the livestock industry. More than other regulated industries, the livestock industry operates in very competitive markets that do not ordinarily allow producers to raise their prices if local fees are raised. It would be particularly difficult to justify new fees in the hog industry if the current low prices continue.

Introduction

In recent years, there has been growing controversy over the economic and environmental impacts of the livestock industry in Minnesota. Similar to trends in other states, Minnesota's livestock industry has seen a growth in the number of large feedlots and an increasing tendency for feedlot owners to live offsite. The number of farms with dairy cows has fallen 43 percent since 1988, and the number with hogs has declined 35 percent. Meanwhile, an increasing share of permits issued by the Minnesota Pollution Control Agency (MPCA) has been for larger feedlots, particularly swine facilities. In 1990, 4 percent of the permits issued to swine feedlots were for facilities with 1,000 or more animal units, or the equivalent of 2,500 or more hogs in excess of 55 pounds each.[1] By 1997, the share of swine permits issued to large facilities had grown to 32 percent.

As a result of these trends, Minnesota citizens have been voicing increasing environmental and economic concerns about feedlots. In response to these concerns, the 1998 Legislature approved the preparation of a generic environmental impact statement (GEIS) by the Environmental Quality Board. The GEIS is expected to examine the "long-term effects of the livestock industry as it exists and as it is changing on the economy, environment, and way of life of Minnesota and its citizens."[2]

This report focuses on the environmental regulation of feedlots.

Because the GEIS is expected to take two or more years to complete, the Legislative Audit Commission directed our office to conduct a shorter and more focused study of feedlots. Our study focuses on the adequacy of the environmental regulation of feedlots by MPCA and the counties that have chosen to participate in the feedlot regulation program. Our evaluation addressed the following questions:

- **Does MPCA review permit applications in a thorough and timely manner? Does MPCA have adequate design standards for the construction of manure storage structures?**

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1 An "animal unit" is a measure that attempts to rate animals based on the volume and nutrient content of the manure they produce. For example, the manure produced by a slaughter steer or heifer is considered to be equal to 1.0 animal unit. The animal unit equivalents for other animals listed in MPCA rules include: mature dairy cow (1.4 animal units), horse (1.0), swine over 55 pounds (0.4), duck (0.2), sheep (0.1), swine under 55 pounds (0.05), turkey (0.018), and chicken (0.01). For an animal not mentioned in MPCA rules, the number of animal units is defined as the animal's average weight divided by 1,000 pounds. See *Minn. Rules*, 7020.0300, subp. 5.

2 *Minn. Laws* (1998), ch. 366, sec. 86, subd. 2.

- **Does MPCA conduct appropriate inspections of feedlots prior to issuing permits and during construction?**

- **Do MPCA and counties provide adequate oversight of feedlots on an ongoing basis, including taking appropriate actions to ensure that feedlots, when closed, are not pollution hazards?**

- **Does MPCA adequately analyze pollution risks for large feedlots that require preparation of an environmental assessment worksheet (EAW)?**

- **Does MPCA adequately respond to complaints about feedlot pollution and adequately enforce existing laws, rules, and permit conditions?**

We examined the regulatory efforts of MPCA and participating counties.

- **How much do counties vary in their regulatory practices? What are some of the strengths and weaknesses of county feedlot programs? How could MPCA or the Legislature provide better oversight or incentives to counties to encourage development of good regulatory programs?**

- **What are the deficiencies in MPCA's current administrative rules regulating feedlots and will MPCA's proposed rules adequately address the problems with existing rules?**

- **Do MPCA and the counties have adequate resources to operate feedlot regulatory programs? If additional resources became available, where should they be targeted?**

In conducting this study, we interviewed MPCA management and staff, county regulatory staff, other state and local agency staff, livestock producers, environmental groups, concerned citizens, and other state and national experts. We reviewed MPCA permit, enforcement, and environmental review files in detail. We surveyed county regulatory officials and personally visited with some of them. We also reviewed existing reports and literature on feedlot pollution and regulation and examined information on the regulatory activities of other states. Finally, we visited feedlots in rural Minnesota to see firsthand the steps being taken to address water and air pollution concerns.

Chapter 1 of this report provides background information on the livestock industry in Minnesota and its potential impact on the environment. It also examines the role of MPCA and counties in regulating feedlots. Chapter 2 presents our findings on the adequacy of the regulatory efforts of MPCA and counties. Chapter 3 discusses our recommendations for improving feedlot regulation in Minnesota.

Background

CHAPTER 1

Since the 1960s, Minnesota has made concerted efforts to reduce environmental pollution from a variety of "point sources" including municipal and industrial waste, solid waste from landfills and dumps, air pollution from automobiles and factories, and hazardous wastes from a variety of sources. As wastewater treatment plants and other pollution controls have reduced the environmental hazards from point sources, concern has shifted to "nonpoint source" pollution from agricultural runoff, such as pesticides, commercial fertilizers, and animal feedlots.

Livestock farms may raise thousands of animals and generate enormous quantities of waste. Animal waste from feedlots, if not managed properly, has the potential of polluting Minnesota's lakes, streams, and ground water. In addition, high concentrations of animal wastes may emit unpleasant odors and gases such as hydrogen sulfide. The Minnesota Pollution Control Agency (MPCA) administers and enforces state environmental laws and rules to protect the environment from pollution, including the threat of water and air pollution from animal feedlots.[1] Under Minnesota law, MPCA may delegate some of its feedlot regulation responsibilities to counties.[2]

In this chapter, we review trends in livestock production in Minnesota, examine the potential impact of animal feedlots on the environment, and present an overview of MPCA and county regulation of animal feedlots. We ask:

- **How many and what types of animals are raised in Minnesota? Where are they located? What is their role in Minnesota's economy?**
- **Why is it important from an environmental perspective to regulate feedlots?**
- **How does MPCA regulate feedlots? How many staff does MPCA assign to feedlot regulation and what are their responsibilities? Which feedlots must obtain permits and what are the requirements of these permits?**

1 *Minn. Stat.* §§115.03 and 116.07.

2 *Minn. Stat.* §116.07, subd. 7.

- **Which counties have authority to run feedlot programs? What are the responsibilities of these counties?**

- **What government financial assistance is available to livestock producers wishing to correct pollution problems?**

To answer these questions, we reviewed Minnesota statutes and rules, interviewed MPCA staff, examined data from the Census of Agriculture and the Minnesota and National Agricultural Statistics Services, surveyed county feedlot officers from the 47 counties with feedlot delegation agreements, and reviewed research studies and reports on the environmental impacts of animal feedlots.

MINNESOTA FEEDLOTS

Animal feedlots emerged as an important environmental issue in the 1990s. As recently as 1990, MPCA had only 2 full-time staff working on feedlot issues, but by 1998, the agency had 24 full-time positions in feedlot regulation. To help us understand the growing environmental concerns with feedlots, we examined the role of livestock production in Minnesota's economy, reviewed trends in the livestock industry, and examined the potential impact of animal feedlots on the state's water and air quality.

Minnesota's Livestock Industry

Overall, agricultural production and services account for about 3 percent of Minnesota's gross state product. Agriculture's impact on the state's economy is greater if one considers the effect of agricultural activity on other economic sectors such as retail businesses.

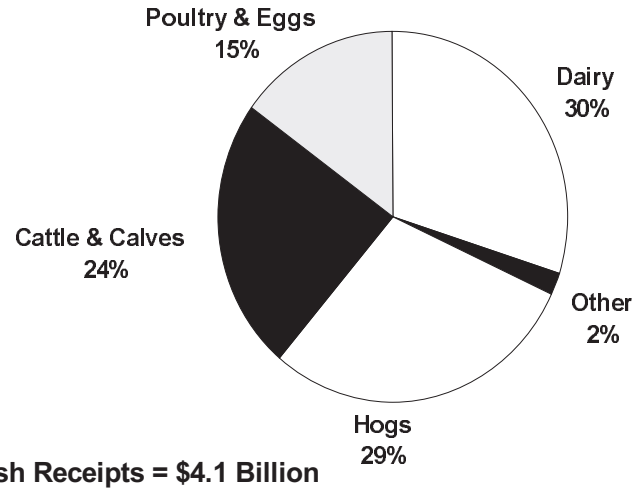
In 1997, cash receipts from livestock production exceeded $4 billion in Minnesota.

The livestock industry is a significant component of the state's agricultural economy. Livestock and related products bring in almost as much cash revenue as crop production in Minnesota. In 1997, cash receipts from farm marketings totaled $8.155 billion. Crop production accounted for $4.101 billion in receipts, while livestock and related products accounted for $4.054 billion, or 49.7 percent of the total.[3] One key difference between livestock and crop production is that livestock production tends to be much less dependent on exports. The estimated value of crop exports are five to six times the value of livestock exports.

The largest revenue producer within Minnesota's livestock industry is the dairy sector. As Figure 1.1 shows, dairy products accounted for 30 percent of cash revenue generated in the livestock industry in 1997. Other large components of the industry include hogs (29 percent), cattle and calves (24 percent), and poultry

3 Minnesota Agricultural Statistics Service, "Agri-View: Minnesota Farm Income," September 29, 1998, WWW document, URL http://www.nass.usda.gov/mn/agvw1898.htm (October 16, 1998). The $8.155 billion total does not include $417 million in government payments or $495 million in other farm income such as income from custom work, machine hire, and recreation.

Figure 1.1: Source of Cash Receipts in Minnesota's Livestock Industry, 1997



Total Cash Receipts = $4.1 Billion

SOURCE: Minnesota Agricultural Statistics Service.

and eggs (15 percent). Turkeys dominate the poultry and egg sector, accounting for more than 60 percent of poultry and egg cash receipts.

Minnesota ranks high nationally in turkey, hog, dairy, and egg production.

Minnesota ranks high nationally in a number of livestock categories. Minnesota is the second highest among the 50 states in turkey production after North Carolina. Minnesota trails only Iowa and North Carolina in the number of hogs and pigs. In terms of the number of milk cows and milk production, Minnesota ranks fifth among the 50 states. Minnesota is also third in cheese production, fifth in butter production, fifth in ice cream production, and ninth in egg production. Table 1.1 shows how Minnesota ranks in these and other categories.

Minnesota's share of national livestock inventories and production has not changed much over the last ten years except in the dairy sector. The number of hogs and pigs grew 17 percent in Minnesota from 1988 to 1997 compared with 10 percent nationally. Turkey production in pounds grew 46 percent in Minnesota and 43 percent across the nation. Egg production grew 31 percent compared with 11 percent nationally, and broiler production rose 55 percent in Minnesota and 67 percent nationwide. The number of cattle in Minnesota did not change between January 1989 and January 1998 but grew 3 percent nationally.

In the dairy sector, milk production fell 12 percent in Minnesota between 1988 and 1997, while national milk production increased 8 percent. The difference in trends is due to a greater reduction in the number of milk cows in Minnesota. Productivity, measured as the amount of milk produced per milk cow, grew 19 percent both in Minnesota and across the nation. However, the number of milk cows decreased 26 percent in Minnesota compared with a 9 percent decline nationwide.

Table 1.1: Top Ranking States in the Livestock Industry

MEAT ANIMALS

Number of Hogs and Pigs, December 1, 1997 (in Millions)		Number of Cattle and Calves, January 1, 1998 (in Millions)		Number of Beef Cows, January 1, 1998 (in Millions)		Number of Sheep and Lambs, January 1, 1998 (in Millions)	
1. Iowa	14.50	1. Texas	14.3	1. Texas	5.52	1. Texas	1.50
2. North Carolina	9.80	2. Nebraska	6.6	2. Missouri	1.99	2. California	0.87
3. **Minnesota**	**5.50**	3. Kansas	6.6	3. Oklahoma	1.96	3. Wyoming	0.68
4. Illinois	4.80	4. Oklahoma	5.4	4. Nebraska	1.93	4. Colorado	0.58
5. Indiana	3.90	5. California	4.6	5. South Dakota	1.56	5. Montana	0.41
		11. (Tie) **Minnesota**	**2.6**	27. **Minnesota**	**0.40**	12. **Minnesota**	**0.17**
US Total	60.91	US Total	99.5	US Total	33.7	US Total	7.62

DAIRY ANIMALS AND PRODUCTS

Number of Milk Cows January 1, 1998 (in Millions)		Production of Milk, 1997 (in Millions of Pounds)		Factory Production of Cheese, 1996 (in Millions of Pounds)		Factory Production of Butter, 1996 (in Millions of Pounds)		Factory Production of Ice Cream, 1996 (in Millions of Gallons)	
1. Wisconsin	1.38	1. California	27,628	1. Wisconsin	2,096	1. California	306	1. California	109
2. California	1.35	2. Wisconsin	22,368	2. California	1,054	2. Wisconsin	295	2. Texas	48
3. New York	0.70	3. New York	11,547	3. **Minnesota**	**682**	3. Washington	95	3. Indiana	45
4. Pennsylvania	0.64	4. Pennsylvania	10,742	4. New York	584	4. Pennsylvania	79	4. Ohio	41
5. **Minnesota**	**0.57**	5. **Minnesota**	**9,210**	5. Idaho	433	5. **Minnesota**	**59**	5. **Minnesota**	**41**
US Total	9.19	US Total	156,602	US Total	7,218	US Total	1,174	US Total	879

POULTRY, EGGS, AND OTHER

Turkeys Produced, 1997 (in Millions of Pounds)		Production of Eggs, 1997 (in Millions)		Production of Broilers, 1997 (in Millions of Pounds)		Chickens Sold, 1997 (in Millions of Pounds)		Production of Mink Pelts, 1997 (in Millions)	
1. North Carolina	1,354	1. Ohio	6,976	1. Georgia	5,914	1. Georgia	107	1. Wisconsin	0.70
2. **Minnesota**	1,026	2. California	6,663	2. Arkansas	5,590	2. Arkansas	79	2. Utah	0.67
3. Missouri	590	3. Pennsylvania	5,788	3. Alabama	4,350	3. North Carolina	69	3. **Minnesota**	**0.31**
4. Arkansas	525	4. Indiana	5,652	4. North Carolina	3,658	4. Alabama	66	4. Oregon	0.24
5. Virginia	485	5. Iowa	5,528	5. Mississippi	3,313	5. Pennsylvania	58	5. Idaho	0.19
		9. **Minnesota**	**2,957**	19. **Minnesota**	**241**	13. **Minnesota**	**19**		
US Total	7,216	US Total	77,401	US Total	37,523	US Total	935	US Total	2.84

SOURCE: National Agricultural Statistics Service.

Hog prices declined dramatically at the end of 1998.

Recent price trends in the livestock industry have been favorable for dairies but very unfavorable for hog producers. October 1998 milk prices were up more than 20 percent from their 1997 levels both in Minnesota and nationally. However, hog prices have declined significantly. Nationally, hog producers received $28.50 per hundred pounds in October 1998, compared to $47.30 in October 1997, a 40 percent decline.[4] In December 1998, hog prices dropped to below $10 per hundred pounds, a level not seen for 25 to 30 years and well below the average

4 Minnesota Agricultural Statistics Service, "Minnesota Ag News: Price Report," October 30, 1998, WWW document, URL http://www.nass.usda.gov/mn/pric1098.htm (November 25, 1998).

cost of raising hogs.[5] Prices recovered in mid-January 1999 to about $30. The decline has come despite increasing exports and domestic consumption. Rather, it has been attributed to increasing supplies resulting from the expansion of U.S. and Canadian hog production and a decrease in processing capacity resulting from the closure of several packing plants.

Beef prices have declined less dramatically, with the nationwide average price for cattle declining 9 percent from $63.30 per hundred pounds in October 1997 to $57.90 in October 1998. Minnesota beef cattle prices were $54.80 in October 1998. Turkey prices have remained fairly constant during the 1990s.

Characteristics of Feedlots

A "feedlot" is a confined area where animals are housed.

In its rules, MPCA defines an animal feedlot as "a lot or building...intended for the confined feeding, breeding, raising, or holding of animals and specifically designed as a confinement area in which manure may accumulate, or where the concentration of animals is such that a vegetative cover cannot be maintained within the enclosure."[6] There are three basic types of feedlots: total confinement feedlots, partial confinement facilities, and open lots.

Most newer feedlots are total confinement facilities, in which the livestock are completely confined within a building. Waste from such a facility may fall through a slatted floor and be stored in a concrete pit beneath the structure, or pumped to an earthen basin outside the structure before being applied to farm land. For some types of animals, the waste may be scraped from the floor of the facility and transported for land application or temporary storage outdoors.

Many older feedlots are open lots, in which livestock are generally outdoors. The area in which a vegetative cover cannot be maintained, but not pasture land on which some types of animals may occasionally graze, is considered a feedlot for regulatory purposes. To avoid manure runoff into lakes and streams, the manure on an open lot may be scraped and transported elsewhere for either storage or land application. Alternatively, a collection system may be used to collect the runoff, or vegetative strips may serve to filter out nutrients and contamination. A partial confinement feedlot combines some features of both an open lot and a total confinement facility. Animals are kept in buildings at certain times but allowed outside in an enclosed area or on pasture land at other times.

State officials do not know exactly how many feedlots there are in Minnesota, but MPCA has estimated that Minnesota has about 45,000 farms with animal feedlots.[7] According to the Census of Agriculture, there were 75,079 farms in

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5 Lien, Dennis, "Legislator Panels Hear Hog Farmers' Woes," *St. Paul Pioneer Press*, January 8, 1999, Sec. B, p. 1 and Burgdorfer, Bob, "Hog Prices Decline to 30-Year Low," *Minneapolis Star Tribune*, December 14, 1998, sec. D, p.1. These market prices do not apply to all hog sales. Some livestock producers have contracts with packing plants that insulate them from market price swings to some extent.

6 *Minn. Rules*, 7020.0300, subp. 3. Pastures are not feedlots.

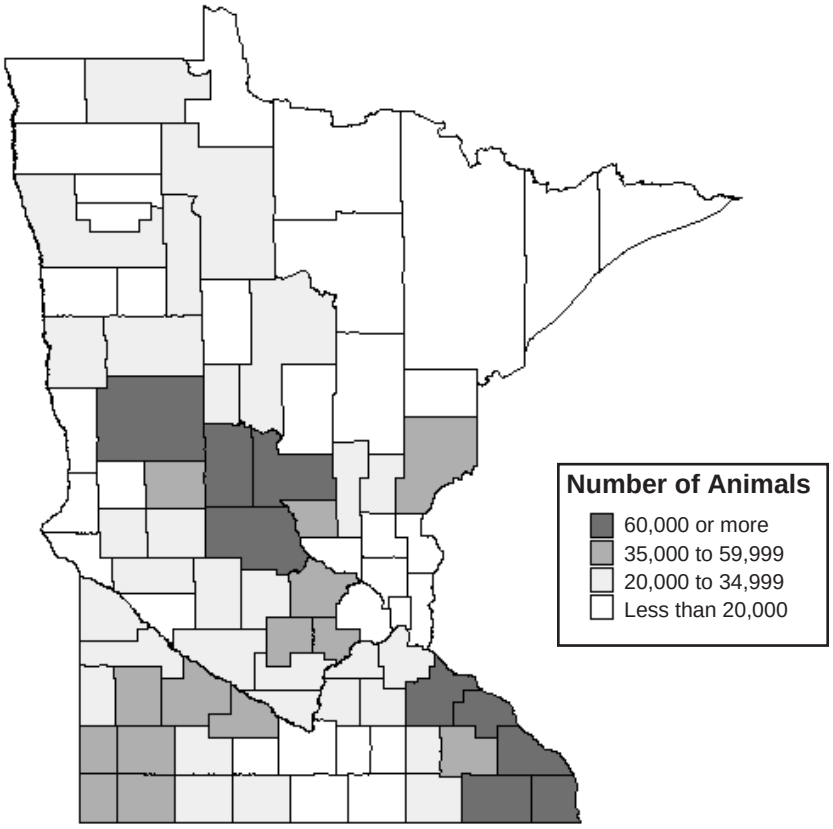
7 Minnesota Pollution Control Agency, *General Feedlot Program Information* (St. Paul, July 1997), 1.

Minnesota in 1992. About half of them were primarily crop farms, and about half were primarily livestock farms.[8] However, the census does not indicate how many of the crop farms also had livestock. In addition, the 1997 Census of Agriculture (due to be released in 1999) will probably indicate a reduction in the number of farms.

According to the Minnesota Agricultural Statistics Service, the majority of livestock in Minnesota is raised in the southern half of the state, as shown in Figures 1.2 and 1.3. Figure 1.2 shows the distribution of cattle by county.[9] Cattle populations are highest in the counties northwest and southeast of the Twin Cities. Figure 1.3 shows that swine populations are highest in south central and

Cattle and calf populations are highest in central and southeast Minnesota.

Figure 1.2: Cattle and Calf Population by County, January 1998



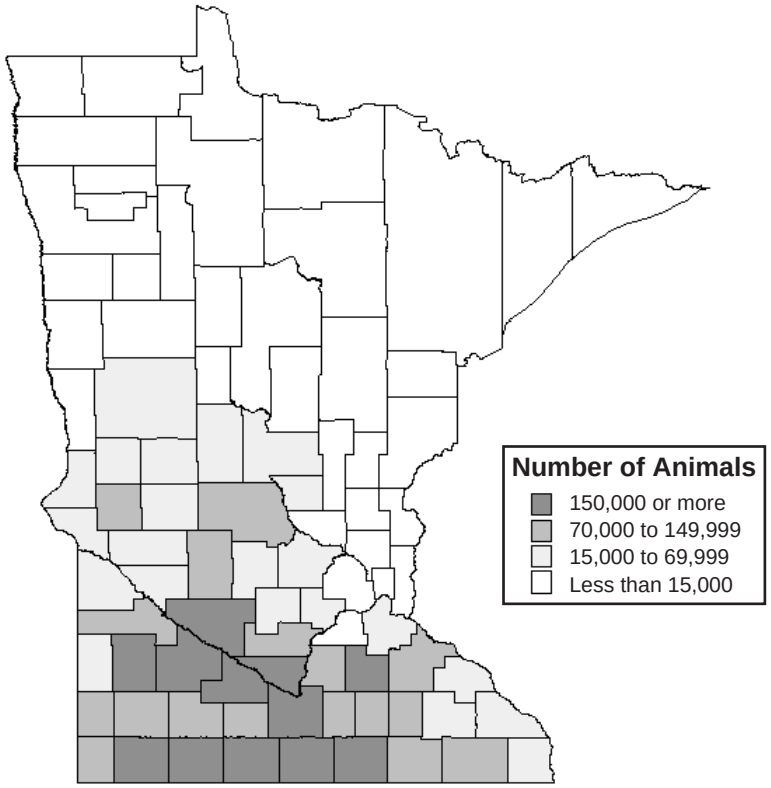
SOURCE: Minnesota Agricultural Statistics Service.

8 U.S. Department of Commerce, Bureau of the Census, *1992 Census of Agriculture*, July 15, 1994, WWW document, URL http://www.nass.usda.gov/census/census92/volume1/mn-23/92_mn.htm (June 30, 1998).

9 The term "cattle" includes beef cows, milk cows, heifers, steers, bulls, and calves.

Most hog production occurs in southern Minnesota.

Figure 1.3: Swine Population by County, December 1997



SOURCE: Minnesota Agricultural Statistics Service.

southwest Minnesota. Table 1.2 lists the counties with the highest numbers of beef cows, dairy cows, and hogs. Fillmore County in southeastern Minnesota has the most beef cows. Stearns County in the central part of the state has the most dairy cows, and Martin County in south central Minnesota has the most hogs. The Minnesota Agricultural Statistics Service does not provide county populations of poultry, but it does show that 52 percent of Minnesota's layer chickens in 1996 were in the central region, and 23 percent were in the south central region.[10]

Agricultural census data reveal how livestock production has changed over the last few decades. For example:

10 Minnesota Agricultural Statistics Service, "Poultry: Chicken Inventory, Egg Production and Value, Minnesota, 1992-96," June 29, 1998, WWW document, URL http://www.nass.usda.gov/mn (July 13, 1998).

Table 1.2: Top Minnesota Livestock Counties

	County	Number of Animals
Beef Cows	Fillmore	20,200
	Otter Tail	14,500
	Houston	12,300
	Cass	12,200
	Olmsted	11,000
Dairy Cows	Stearns	64,000
	Otter Tail	31,300
	Morrison	27,000
	Winona	26,700
	Goodhue	25,400
Hogs	Martin	524,000
	Blue Earth	302,000
	Brown	235,000
	Nicollet	217,000
	Renville	210,100

NOTE: Cow populations as of January 1, 1998. Hog populations as of December 1, 1997.

SOURCE: Minnesota Agricultural Statistics Service, *Minnesota Ag News*, May 27, 1998 and July 31, 1998 (St. Paul, 1998).

- **With the exception of dairy cows, the number of animals raised in Minnesota has remained fairly stable since 1964, but the number of farms with livestock has decreased dramatically. As a result, the number of animals per farm has increased.**

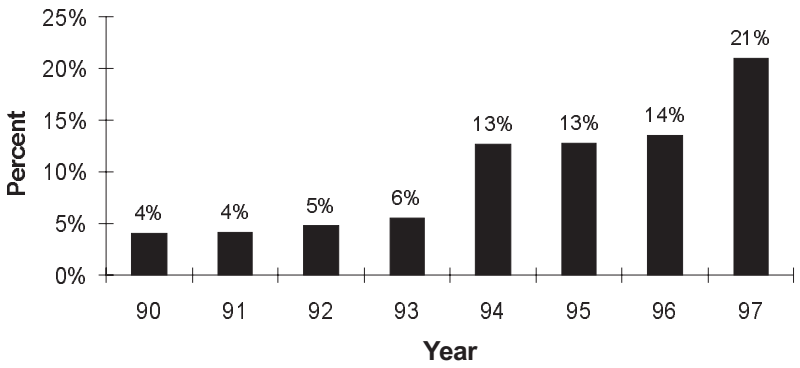
The number of livestock farms has decreased, but the number of animals per farm has increased.

This is part of a long-term national trend in agriculture, where smaller farms have gone out of business or been purchased by larger farms. The number of farms in Minnesota declined by 43 percent between 1964 and 1992, from about 131,000 to 75,000. On the other hand, the average size of farms increased by 46 percent, from 235 acres in 1964 to 342 acres in 1992.[11] This trend is also evident in livestock production. For example, there were about 3.4 million hogs and pigs on 55,000 farms in 1964, for an average of 61 animals per farm. By 1997, the number of hogs and pigs increased to 5.5 million, but there were only about 10,800 swine farms for an average of 509 animals per farm. The number of dairy farms decreased by about 85 percent between 1964 and 1997, from over 70,000 farms to about 10,000. The number of dairy cows per farm increased, however, from 18 cows per farm in 1964 to 58 in 1997.[12]

11 U.S. Department of Commerce, *1992 Census of Agriculture*.

12 1964 data are from Bureau of the Census, *1992 Census of Agriculture*; 1997 data are from Minnesota Agricultural Statistics Service.

Figure 1.4: Percent of Feedlot Permits with 1,000 or More Animal Units, 1990-97



SOURCE: Minnesota Pollution Control Agency.

The number of large feedlots has grown in the 1990s.

This movement towards greater concentration of animals per farm is also apparent from a review of MPCA feedlot permits. Through 1990, MPCA had issued a total of 90 permits for feedlots with 1,000 or more animal units. By 1997, the number of permits for feedlots with 1,000 or more animal units had grown to 662. Moreover, as Figure 1.4 shows:

- **The percentage of all permits issued by MPCA for feedlots with 1,000 or more animal units increased from 4 percent in 1990 to 21 percent in 1997.**

A majority of the large feedlots issued permits by MPCA between 1990 and 1997 were swine feedlots. About 59 percent of the permits for feedlots with 1,000 or more animal units were swine feedlots, 22 percent were beef cattle operations, 11 percent were turkey feedlots, 5 percent were chicken feedlots, and 4 percent were dairy feedlots.

The growth of large livestock farms with greater concentrations of animal waste has resulted in increased volumes of complaints about feedlot odor and has raised new issues of potential air pollution, in addition to heightening traditional concerns about the effect of feedlots on water quality. As a result, the regulation of animal feedlots has become a major environmental issue in the 1990s.

Environmental Concerns

According to MPCA, Minnesota's estimated 45,000 feedlots produce animal wastes that would exceed the amount of human waste produced by a population of over 40 million people.[13] Animal manure can be a valuable resource when properly applied as a fertilizer, but improper storage, application, or disposal of manure can cause serious water pollution problems.

Manure contains many nutrients valuable for crop production, including nitrogen, phosphorus, and potassium. But these same nutrients may contribute to both ground water and surface water contamination if manure leaks from improperly constructed storage systems, is applied to cropland in excess of agronomic rates, or is carried by precipitation runoff to drainage ditches and waterways.[14] For example, if nitrogen is applied to cropland in excess of agronomic rates, it can be converted into nitrates and leach into ground water and be carried to drinking water sources. Water contaminated by nitrates can cause methemoglobinemia, or "blue baby syndrome," a potentially fatal disease. Other microorganisms found in manure such as E-coli, salmonella, and cryptosporidium may also contaminate surface water and drinking water supplies and cause disease in humans.

Improper storage, application, or disposal of manure may pollute ground or surface water.

Increased levels of phosphorus, as well as other nutrients and organic materials in manure, can accelerate eutrophication of lakes and lead to excessive plant and algae growth, causing a deterioration of water clarity. One particularly harmful plant species is blue-green algae, which may be toxic to wildlife and domestic animals and has been associated with human health problems such as respiratory allergies, skin rashes, and gastric disorders. Manure can also reduce levels of dissolved oxygen in lakes and streams and can result in fish kills. Sport fish such as trout, walleye, and bass are especially sensitive to oxygen depletion. Various production-related materials such as antiseptics, antibiotics and footwash materials can cause water quality problems if they leak from manure storage systems or are discharged into surface water. Finally, concerns have been raised about the high concentration of hormones in chicken manure and their potential impact on animal and human reproductive systems.

MPCA has administered several Clean Water Partnership projects that have attempted to study the impacts of agricultural practices on specific Minnesota watersheds.[15] These studies have found that animal feedlots were a significant source of phosphorous in the watersheds, although it was not possible to isolate feedlots from other agricultural practices and land uses that contribute to nutrients and sediments in streams and lakes.[16]

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13 Minnesota Pollution Control Agency, *General Feedlot Program Information*, 1.

14 Applying at agronomic rates means that manure is applied to crop land at rates and times of the year that are compatible with the nutrient requirements and growing characteristics of the crops, taking into account soil characteristics, drainage, and the slope of the land.

15 The Clean Water Partnership Program was created in 1987 to address pollution associated with runoff from agricultural and urban areas. See *Minn. Stat.* §§103F.701-103F.761.

16 Schuler, David J., *Lake Shaokatan Restoration Project: Final Report* (Yellow Medicine River Watershed District, 1996); Minnesota Pollution Control Agency, *Minnesota River Assessment Project Report* (St. Paul, 1994); Barr Engineering Company, *Final Report: Big Birch Lake Diagnostic/Feasibility Study* (Minneapolis, 1994).

The degree to which feedlots contribute to water pollution depends on their size, location, and manure management practices. We surveyed county feedlot officers and asked them to rate the significance of water pollution problems from several types of feedlots. They indicated that smaller feedlots tend to have more pollution problems than larger feedlots and that feedlots with open lots were more of a problem than total confinement feedlots. For example, 18 percent of county feedlot officers rated water pollution problems from feedlots with over 1,000 animal units as "severe" or "significant," but 33 percent rated water pollution problems from feedlots with less than 300 animal units as severe or significant.[17] Fifty-one percent of the county feedlot officers said that water pollution problems from open lots were severe or significant, but only 5 percent of the feedlot officers rated problems from total confinement facilities as severe or significant.[18] Finally, county feedlot officers believe that manure runoff from feedlots and cropland was a bigger problem than leaking earthen basins or concrete pits.

Complaints about feedlot odors have increased in recent years.

In addition to concerns about water pollution, feedlots with high concentrations of manure may produce unpleasant odors and emit gases such as hydrogen sulfide, ammonia, and various volatile organic compounds that may affect air quality. With the trend to larger feedlots and bigger manure storage facilities, complaints about feedlot odors and concerns about air quality have increased in recent years. Other environmental concerns raised include the health and nuisance impacts of flies, the effects of endotoxins in the air at certain facilities, and the contribution of manure emissions to greenhouse gas effects and acid rain.[19]

MPCA'S ROLE

The Minnesota Pollution Control Agency is the state agency responsible for protecting the state's environment from pollution, including pollution from animal feedlots.[20] MPCA does this by adopting rules that govern feedlot regulation, conducting environmental reviews for large feedlots or those with a potential to create pollution hazards, issuing feedlot permits, overseeing compliance with feedlot rules and permit conditions, investigating complaints about feedlots, and taking enforcement action against feedlot owners who violate state pollution laws, agency rules, or permit conditions.

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17 Eight percent of the feedlot officers rated the water pollution problem from large feedlots as "modest" and 75 percent said the problems are "minor" or "none." In contrast, 40 percent said problems from small feedlots are modest and 26 percent said minor or none.

18 Fifteen percent of the county feedlot officers said water pollution problems from total confinement feedlots were modest and 80 percent said problems were minor or none. For open lots, 23 percent said water pollution problems were modest and 23 percent said minor or none. However, MPCA staff and staff from several counties pointed out to us that although the risks of a major manure spill from large total confinement feedlots was very small, the potential environmental impact if a leak or spill did occur was much greater from a large feedlot than from a small feedlot.

19 An endotoxin is a portion of the outer cell wall of certain types of bacteria called Gram-negative bacteria and includes E-coli bacteria.

20 *Minn. Stat.* §§115.03, 116.01, and 116.07.

MPCA is governed by a nine-member citizens' board appointed by the Governor.[21] The board adopts agency rules and, upon request, may make final decisions on environmental reviews, permit applications, and variances from agency rules.[22] MPCA's commissioner, also appointed by the Governor, serves as chairman of the MPCA board. The commissioner is responsible for administering the day-to-day operations of the department and for making all decisions that are not required to be made by the agency board. [23]

Permit Process

MPCA is responsible for issuing permits to feedlots in the state. Most of the permits MPCA issues are either certificates of compliance or interim permits. Certificates of compliance are issued to feedlots that meet agency standards, and they have no expiration date. Interim permits are issued for new construction and for feedlots that pose a potential pollution hazard to the environment, and they expire after ten months. Interim permits should be replaced with a certificate of compliance once construction has been completed satisfactorily or corrective action has been taken to eliminate the pollution hazard. MPCA also issues National Pollution Discharge Elimination System (NPDES) permits to certain large feedlots (over 1,000 animal units) that have the potential to discharge to waters of the state.[24] Currently, MPCA has permit fees only for NPDES permits.[25]

New or expanding feedlots with 50 or more animal units must apply for a permit from MPCA.

According to Minnesota Rules, an owner of a proposed or existing feedlot with 50 or more animal units must apply for a feedlot permit when: 1) a new animal feedlot is proposed; 2) a change in operation of an existing animal feedlot is proposed; 3) ownership of an existing animal feedlot changes; or 4) an inspection of the facility by MPCA reveals that the feedlot creates or maintains a potential pollution hazard.[26] To apply for an MPCA permit, the feedlot owner must complete a four-page application which asks for information on the proposed or existing feedlot. Information required includes the soils and hydrology of the site, the number and types of animals, the types of facilities used to house the animals, and proposed manure management practices. Applicants must also submit a

21 Minn. Stat. §116.02, subd. 1. One board member must be knowledgeable in the field of agriculture and one must represent organized labor.

22 Minn. Stat. §116.02, subd. 6.

23 Minn. Stat. §§116.02, subd. 4 and 116.03.

24 Congress established the National Pollution Discharge Elimination System in the 1972 Clean Water Act. The system is administered by the states and requires all dischargers of municipal and industrial waste (including large feedlots) to obtain NPDES permits. These permits require certain environmental safeguards and place limits on the amount of pollutants that may be discharged to surface waters.

25 For individual NPDES permits, MPCA charges an $85 application fee and a $1,230 annual fee. MPCA has not issued any general NPDES permits for feedlots. Under current regulations, however, these would require an $85 application fee and a $260 annual fee. See *Minn. Rules,* 7002.0310, subp. 2(B) and subp. 3.

26 Within shoreland areas, a permit is required under similar circumstances for feedlots with more than ten animal units. See *Minn. Stat.* §116.07, subd. 7(g) and *Minn. Rules,* 7020.0500, subp 1.

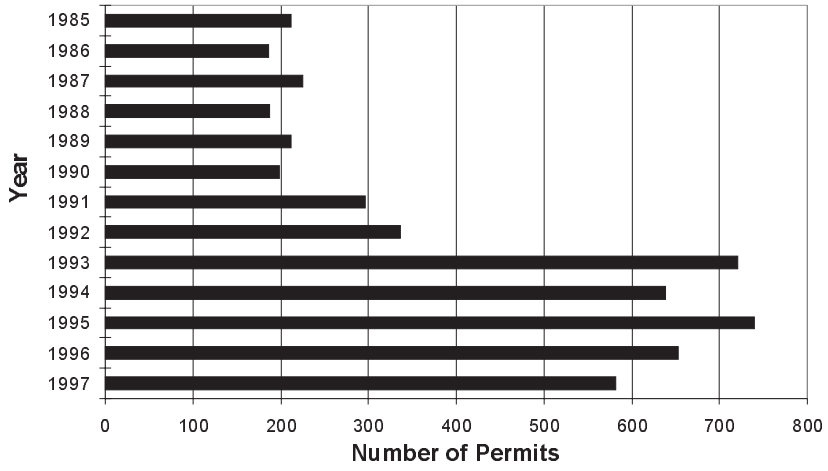
sketch of the proposed or existing feedlot, aerial photographs of the farmstead and all fields on which manure will be spread, and a soils map. Additionally, applicants planning to construct manure storage facilities must include plans and specifications prepared by a professional engineer or the Natural Resources Conservation Service, and applications for feedlots with 500 or more animal units must include proof of public notification.[27]

After receiving a feedlot application, MPCA staff conduct an initial completeness review to determine whether the applicant has provided the required information. Based on this review, MPCA sends a letter informing the applicant that the application is under review or instructing the applicant of additional information necessary before review of the application can commence. After the application is complete, an engineer completes a more thorough review, evaluating the engineering plans submitted for new construction and the site's potential for pollution. Based upon the engineering review, MPCA issues a certificate of compliance, interim permit, or NPDES permit.[28]

About 16,000 of the state's 45,000 feedlots have MPCA permits.

MPCA estimates that about 16,000 of the approximately 45,000 feedlots in the state have MPCA permits. The number of permits issued by MPCA has varied over the years, as illustrated by Figure 1.5. However, the number issued annually

Figure 1.5: Number of Feedlot Permits Issued, 1985-97



SOURCE: Minnesota Pollution Control Agency.

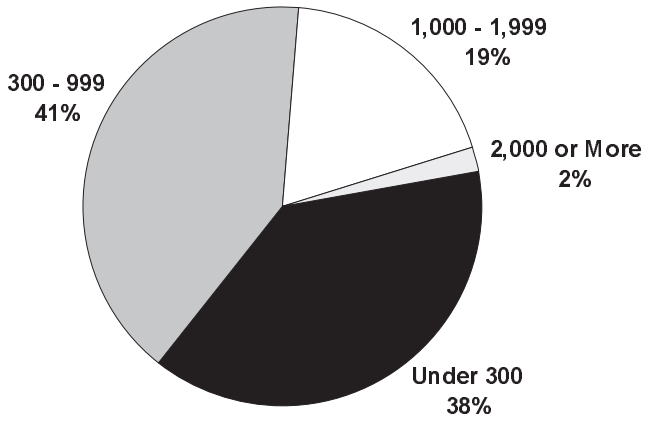
27 *Minn. Stat.* §116.07, subd. 7a requires feedlot owners proposing to construct or expand a feedlot with a capacity of 500 animal units or more to notify, not more than ten days after submitting an application, each resident and owner of property within 5,000 feet of the feedlot. The notification may be sent by mail, delivered in person, or published in a newspaper and must include information on the type of livestock and the proposed capacity of the feedlot.

28 Before issuing an NPDES permit, MPCA must post a public notice and allow for a 30-day public comment period. *Minn. Rules*, 7001.0100, subp. 4 and 7001.1070.

in recent years has been about three times the number issued in the mid- to late-1980s.

About two-thirds of the feedlot permits issued in 1997 were certificates of compliance and one-third were interim permits. Only 1 percent were NPDES permits.[29] Thirty-nine percent of the permits issued were for swine feedlots, followed by beef cows (35 percent), dairy cows (23 percent), chickens (2 percent), and turkeys (1 percent). Figure 1.6 shows that 38 percent of the permits issued in 1997 were for feedlots with fewer than 300 animal units, and 21 percent were for feedlots with 1,000 or more animal units.

Figure 1.6: Percentage of Feedlot Permits Issued by Number of Animal Units, 1997



SOURCE: Minnesota Pollution Control Agency.

Organization and Staffing

As Table 1.3 indicates, the funding for feedlot regulation by MPCA staff was $1.37 million in FY 1998 and $1.87 million in FY 1999. These figures include salaries, fringe benefits, supplies, and expenses for MPCA staff directly involved in feedlot regulation. The figures do not include funding for related spending such as the cost of management and environmental review staff, MPCA's indirect costs, and attorney general fees.

About 77 percent of MPCA's $3.2 million biennial budget for feedlot regulation comes from the state's General Fund, with 12 percent coming from federal sources and 11 percent from water quality permit fees. Of the $2.5 million from

29 As of October 1998, MPCA had issued a total of 23 NPDES permits.

Table 1.3: State Feedlot Regulation Funding, 1998-99 Biennium

MPCA	1998	1999	Total
Main appropriation	$ 811,843	$ 830,814	$1,642,657
Supplemental appropriation	N/A	300,000	300,000
Hydrogen sulfide appropriation	163,000	92,000	255,000
Other general fund	130,500	166,749	297,249
Fee revenue[a]	72,500	284,725	357,225
Federal funds	190,900	197,839	388,739
Subtotal: MPCA[b]	$1,368,743	$1,872,127	$3,240,870
Counties			
Main appropriation	$ 855,000	$ 855,000	$1,710,000
Supplemental appropriation	N/A	350,000	350,000
Subtotal: Counties	$ 855,000	$1,205,000	$2,060,000
Total	$2,223,743	$3,077,127	$5,300,870

N/A = Not applicable.

[a]Fee revenue comes from a variety of water quality permits. Revenue from feedlot permits was about $23,000 in 1998 and is expected to be about $31,000 in 1999.

[b]The subtotal includes funding for only those staff directly involved in feedlot regulation. It does not include management, legal, environmental review, and indirect costs.

SOURCE: Minnesota Pollution Control Agency.

the General Fund, $555,000 is earmarked for particular purposes. The 1997 Legislature designated $255,000 for hydrogen sulfide monitoring and compliance activities, and the 1998 Legislature appropriated $300,000 for the expansion of permitting activities affecting feedlots in excess of 1,000 animal units. An additional $55,000 from the General Fund represents a pass-through of funds to the University of Minnesota for feedlot-related research.

Only about one-fourth of MPCA's feedlot staff are located outside of St. Paul.

The base level staffing for feedlot regulation includes 24 full-time equivalent (FTE) positions. Most of the staff involved in feedlot regulation are housed in MPCA's main office in St. Paul. However, five staff are permanently stationed in MPCA offices around the state, and one engineer spends half of his time in St. Paul and half in an outstate office. There is one staff person in each of the following cities: Brainerd, Detroit Lakes, Mankato, Marshall, and Rochester. An additional seven to eight FTE are involved in feedlot-related functions, including staff assigned to do environmental assessment worksheets and other environmental review work, staff involved in air quality monitoring at feedlots, and the attorney general's staff assigned to work on enforcement, environmental review, and litigation activities related to feedlots. From time to time, other agency staff have temporarily worked on feedlot issues.

MPCA's two largest feedlot regulation activities are permitting and enforcement. MPCA estimates that permitting consumes about 27 percent of its current staff resources, when all staff in the various feedlot regulatory activities are considered. Enforcement, including complaint handling and inspections, takes up about 38 percent of staff time. Other significant uses of staff time include environmental review (13 percent), policy and program development (9 percent), and communication and education (7 percent). Information management and county programs each take up between 2 and 3 percent of staff time.

Two recent changes within MPCA have affected feedlot regulation. First, MPCA underwent a major reorganization at the end of July 1998. Prior to the reorganization, MPCA was organized around major activities such as the regulation of water quality, air quality, hazardous waste, and ground water and solid waste. Most staff involved in feedlot regulation were within two feedlot units in the Nonpoint Source Compliance Section of the Water Quality Division. Staff monitoring feedlot air emissions were in the Air Quality Division, and environmental review staff were in the Environmental Planning and Review Office within the Administrative Services Division. Now MPCA is primarily organized around geographic boundaries, with most feedlot staff in the South District and North District of the reorganized agency. Additional staff resources for feedlot regulation are located in the Metro District, the Policy and Planning Division, and the Environmental Outcomes Division. In September 1998, MPCA assigned a new manager to bring some focus and direction to feedlot regulatory activities now conducted throughout the agency. Although MPCA has reorganized around geographic boundaries, the reorganization has not yet had a major effect on the location of feedlot staff. Of the staff directly involved in feedlot regulation, there are still only five to six staff permanently located outside of the St. Paul office.

MPCA has temporarily reassigned staff from other activities to feedlot regulation.

A second development affecting feedlot regulation is the temporary reassignment of staff to feedlot activities from other activities during fiscal year 1999. Effective October 1, 1998, MPCA reassigned 18 staff to feedlot related activities such as permitting, enforcement, environmental review, air quality policy development, rule preparation, and public information. Most of these 18 staff are assigned part-time to feedlot activities and will work on feedlots for less than a full year. They represent about eight FTEs in terms of the total time they will spend on feedlot activities.

About 53 percent of the costs of reassigning staff, or $241,000, is funded with general fund appropriations available to MPCA for feedlot regulation and does not represent a shifting of funds from non-feedlot related activities. In part, these funds are available because MPCA has not yet filled four vacancies for permanent feedlot staff positions. The remaining 47 percent of the costs, or about $211,000, is funded by water quality permit fees raised from non-feedlot permits. Prior to the reallocation of funds, feedlot regulation was already scheduled to utilize about $73,000 in permit fee revenue in 1999 even though feedlot permits are expected to raise only $31,000 in revenues.

COUNTY FEEDLOT PROGRAMS

In 1998, 47 counties had authority to issue permits for smaller feedlots.

Minnesota law allows MPCA to delegate some of its feedlot permitting responsibilities to counties.[30] To become a "delegated county," the county board must pass a resolution stating that it assumes responsibility for processing permit applications, accompanied by a statement describing permitting procedures. It must also receive written approval from MPCA and appoint a county feedlot officer who is responsible for distributing feedlot permit application forms, helping farmers complete the applications, inspecting feedlots to ensure that they comply with agency rules and local feedlot ordinances, and maintaining feedlot permit records.[31] Figure 1.7 shows the 47 counties that had 1998 feedlot delegation agreements with MPCA and four additional counties that accepted delegation agreements for 1999.

Delegated counties are responsible for issuing certificates of compliance for feedlots with less than 300 animal units if all potential pollution hazards have been corrected, and for feedlots between 300 and 1,000 animal units that do not have a potential pollution hazard.[32] The county must forward all other feedlot permit applications to MPCA. According to MPCA records, counties have issued a total of 4,620 feedlot permits since 1980 when MPCA began keeping records. However, some counties have not provided MPCA with copies of all the permits they issued, so the actual number of county permits is higher. For example, MPCA has records of 506 feedlot permits issued by counties in 1997. According to county feedlot officer reports, however, counties issued a total of 560 new certificates of compliance, 842 revised certificates of compliance, and 109 interim permits, for a total of 1,511 permits in 1997.[33]

The 1997 Legislature appropriated $855,000 per year to counties for feedlot regulation in the 1998-99 biennium.[34] The 1998 Legislature supplemented the FY 1999 appropriation with an additional $350,000.[35] Priority is given to delegated counties, who receive state funding for their feedlot programs based roughly on the number of feedlots in the county.[36] In 1999, counties that have a Level 2 or 3 feedlot inventory will receive $50 per feedlot, and counties with a Level 1 or no feedlot inventory receive $40 per feedlot.[37] Counties must match the state funds with locally generated cash or in-kind contributions. MPCA uses the funds left

30 *Minn. Stat.* §116.07, subd. 7.

31 *Minn. Rules*, 7020.1600, subp. 1.

32 *Minn. Rules*, 7020.1600, subp. 2. Counties may issue interim permits for feedlots under 300 animal units that have a potential pollution hazard that can be corrected within ten months.

33 County feedlot officers file annual reports with MPCA summarizing their permitting, site inspection, complaint investigation, and other activities.

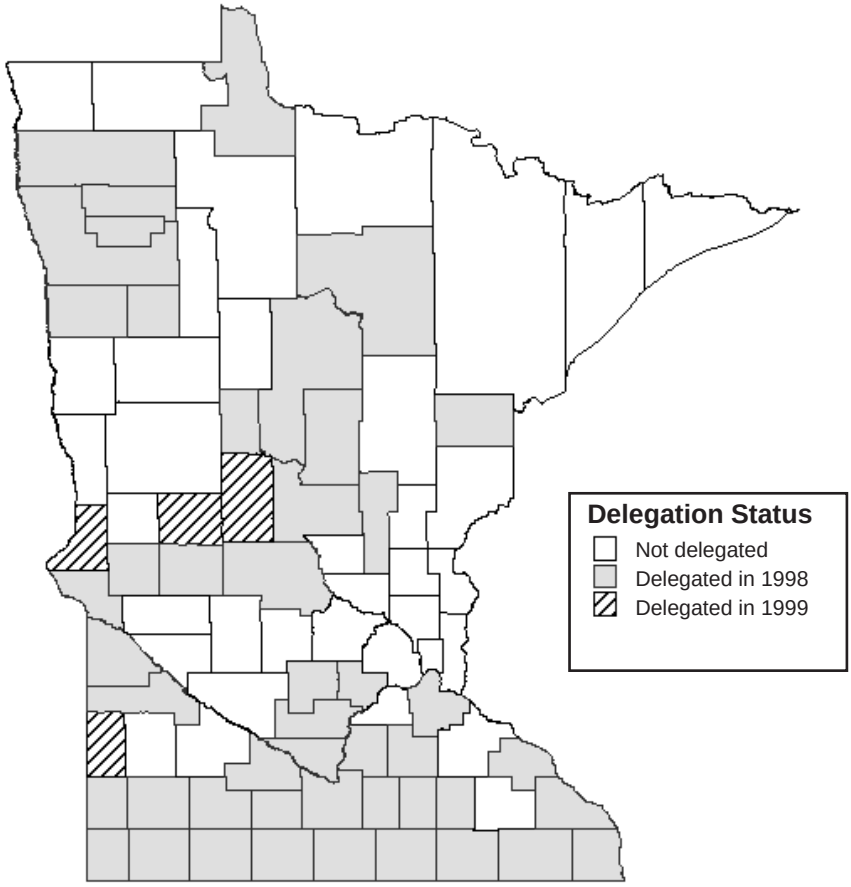
34 *Minn. Laws* (1997), ch. 216, sec. 2, subd. 2.

35 *Minn. Laws* (1998), ch. 401, sec. 2.

36 The funding is appropriated to MPCA and transferred to the Board of Water and Soil Resources which distributes the funds to counties. MPCA determines the amount of funds allocated to each county.

37 A Level 1 feedlot inventory merely lists the location of all feedlots. A Level 2 inventory provides additional information relating to potential pollution problems and a Level 3 inventory provides detailed information on actual pollution problems.

Figure 1.7: Counties With Feedlot Delegation Agreements



SOURCE: Minnesota Pollution Control Agency.

over from the basic grant program to provide additional funding in the form of challenge grants to both delegated and non-delegated counties. These grants are awarded every other year for special projects, such as conducting a feedlot inventory. MPCA awarded $622,565 in base grants to counties for calendar year 1998, and it awarded $382,475 in challenge grants for the year beginning October 1, 1998.[38]

According to our survey of county feedlot officers, delegated counties spent, on average, about $30,000 on feedlot regulation in calendar year 1998.[39] About 56 percent of their feedlot budgets came from state funds, 38 percent from county general funds, and 4 percent from county permit and zoning fees.

38 Although Itasca County is a delegated county, it did not apply for a basic grant in 1998.

39 Forty-one counties answered the question on 1998 feedlot budgets.

Many counties, both delegated and non-delegated, supplement state requirements with requirements in county feedlot ordinances. For example, 45 counties require conditional use or zoning permits for certain feedlots, usually large ones or those with a greater potential for pollution. County ordinances may have restrictions on feedlot size and location, such as requiring setbacks from residences or public buildings. County ordinances may also have requirements on manure storage and land application that are more restrictive than current MPCA rules. A few counties require county feedlot permits in addition to MPCA permits and charge fees for operating feedlots. In addition, some townships have enacted feedlot ordinances or moratoriums on new feedlot construction or expansion.

FINANCIAL ASSISTANCE FOR FEEDLOT OWNERS

There are several grant and loan programs to help feedlot owners install pollution abatement systems.

Constructing pollution abatement systems can be expensive, especially for small livestock producers. The state and federal governments have appropriated funds that provide some financial assistance to farmers to install pollution abatement systems. The state cost share program provides grants to farmers for erosion control and water quality management projects. The 1997 Legislature appropriated $2.12 million per year for the 1998-99 biennium to the Board of Water and Soil Resources for the cost share program.[40] While this appropriation was not specific to feedlot improvements, the 1998 Legislature appropriated an additional $1 million in FY 1999 for cost sharing contracts for water quality management on feedlots.[41] The state cost share funds are distributed to soil and water conservation districts that award grants to local farmers for up to 75 percent of project costs.

In addition, farmers may apply to the Natural Resources Conservation Service's Environmental Quality Incentives Program for federal cost-sharing grants that pay 75 percent (up to a maximum of $50,000) of the cost of waste management control projects. In the year ending September 30, 1998, 250 farmers (out of about 500 applicants) received grants totaling $4.5 million. About 70 percent of the funds was distributed in areas designated as "high priority" and 30 percent was distributed in the remainder of the state. Federal law requires that at least 50 percent of the funds be distributed to farmers to reduce pollution from feedlots.

Finally, the Minnesota Department of Agriculture's Best Management Practices Loan Program provides low-interest loans to farmers for waste management improvements.[42] The maximum loan is $50,000 and farmers have ten years to

40 *Minn. Laws* (1997), ch. 216, sec. 6.

41 *Minn. Laws* (1998), ch. 401, sec. 5.

42 *Minn. Stat.* §17.117. Since its creation in 1994, the program has received about $27 million in federal funds formerly used for municipal wastewater treatment plants. The 1997 Legislature added $4 million to be used exclusively for improvements to individual septic systems, and the 1998 Legislature appropriated another $9 million for this program for any water quality improvements except conservation tillage equipment. About half of the combined state and federal funds have been used for feedlot improvements. See *Minn. Laws* (1997), ch. 246, sec. 6 and *Minn. Laws* (1998), ch. 404, sec. 9, subd. 8.

repay it at an interest rate of 3 percent. Farmers may use the loan to pay the 25 percent share required under the state and federal grant programs described above. So far, 775 loans averaging $19,336 each have been awarded.

These grants and loans have helped some farmers reduce the potential for water pollution from their feedlots. However, the Minnesota Department of Agriculture has estimated that it would take about $615 million for all Minnesota farms to make sufficient improvements to eliminate the threat of water pollution entirely.[43]

SUMMARY

The livestock industry plays an important role in Minnesota's economy. In recent years, changes in the livestock industry have resulted in larger farms with more animals. This has heightened concerns about potential air and water pollution from animal feedlots.

The Minnesota Pollution Control Agency is responsible for regulating feedlots. It does this primarily by issuing permits to feedlots, investigating complaints about feedlots, and taking enforcement action when feedlots violate permit requirements, agency rules, or state laws. MPCA has delegated some of the responsibilities for issuing feedlot permits to counties that have passed resolutions to run feedlot programs.

In Chapter 2, we examine how well MPCA and counties have performed their feedlot regulatory responsibilities, including adopting feedlot rules, conducting environmental reviews, issuing feedlot permits, investigating complaints, and enforcing permit conditions and agency rules.

43 Minnesota Department of Agriculture, *Agricultural Best Management Practices Loan Program* (St. Paul, 1998), 43. This estimate is based on the assumption that there are 22,000 unpermitted feedlots in Minnesota and that the average cost of upgrading their agricultural waste systems is about $28,000.

Feedlot Regulation

CHAPTER 2

The Minnesota Pollution Control Agency (MPCA) has many responsibilities associated with its regulation of feedlots in the state. The agency reviews and processes permit applications, prepares mandatory environmental assessment worksheets for certain large feedlots, reviews citizen petitions for environmental assessment worksheets, investigates complaints and takes enforcement actions regarding water and air quality problems, and oversees counties with delegated authority to issue feedlot permits. In this chapter, we ask:

- **Does MPCA review permit applications in a thorough and timely manner? Does MPCA have appropriate standards for the design and construction of feedlot facilities, and does MPCA visit proposed feedlot sites and inspect construction work?**

- **Does MPCA adequately analyze pollution risks for large feedlots that require an environmental review?**

- **Does MPCA provide sufficient ongoing oversight of feedlots in the state? Is MPCA adequately investigating complaints? What enforcement action does the agency take against feedlots that pose a threat to water or air quality?**

- **How well do counties in the delegated feedlot program perform their duties? Does MPCA provide adequate oversight of county programs?**

- **What problems have MPCA's current administrative rules caused for feedlot regulatory efforts? Will MPCA's proposed rules address these existing problems?**

- **Do MPCA and counties have adequate resources to carry out their regulatory responsibilities for feedlots?**

During our research, we interviewed numerous MPCA employees throughout the state about various aspects of feedlot regulation. We surveyed delegated counties, visited both delegated and non-delegated counties to interview staff about their feedlot programs, and reviewed county ordinances pertaining to feedlots. We reviewed permit and enforcement files, complaint logs, and water and air quality monitoring data. We also visited some feedlots in rural Minnesota and talked with livestock producers and concerned citizens.

Overall, we found that MPCA's feedlot program has several strengths, including the design standards applied to new or expanded feedlots, the monitoring of water quality at certain large feedlots, and the relatively new monitoring of air quality. However, the program also has numerous weaknesses. These weaknesses include a lack of timeliness in reviewing and approving permit applications, insufficient review of some permit applications, limited follow-up on expired interim permits, insufficient resources devoted to visiting sites prior to permit approval or during construction, insufficient oversight of feedlots once they are in operation except in response to complaints, poor tracking of staff responses to citizen complaints, a weak but improving enforcement program, little or no meaningful oversight of delegated county feedlot programs, and the failure to update rules since the late 1970s.

PERMITTING

MPCA is responsible for issuing feedlot permits.

MPCA is responsible for issuing permits to feedlots in the state. MPCA issues "certificates of compliance" for feedlots that meet agency standards and "interim permits" for new construction and feedlots that pose a potential pollution hazard. Certificates of compliance have no expiration date. Interim permits typically expire after ten months and, according to MPCA rules, should be replaced with a certificate of compliance, provided construction has been completed satisfactorily or corrective action has been taken to eliminate the pollution hazard. MPCA also issues National Pollution Discharge Elimination System (NPDES) permits to certain large feedlots that have the potential to discharge to waters of the state.

In this section, we examine how well MPCA carries out its permitting functions. In particular, we discuss MPCA's design standards for manure storage facilities, the thoroughness of permit application review, the adequacy of site visits prior to permit approval and during construction, the time it takes to issue a permit, MPCA's follow-up on interim permits, and its use of National Pollution Discharge Elimination System permits.

Design Standards

Before MPCA issues permits, the agency usually reviews plans and specifications for all proposed manure storage structures to ensure that the structures are designed and constructed in a manner that will not degrade ground or surface water quality.[1] Design plans for liquid manure storage structures must be prepared by a professional engineer or the Natural Resources Conservation Service (NRCS).[2] To facilitate approval of submitted plans, MPCA has issued design guidelines for both concrete manure storage structures and lined earthen basins.

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1 *Minn. Rules*, 7020.0500, subp. 2(c) requires a permit applicant to submit plans for any proposed manure storage structure.

2 *Minn. Laws* (1998), ch. 401, sec. 41, subd. 7(j) requires professionally designed plans for these structures until MPCA adopts new rules that address the need for such plans. The Natural Resources Conservation Service is an agency in the United States Department of Agriculture that works in partnership with local efforts to help conserve, improve, and sustain the environment.

In general, we found that MPCA has adequate design standards for structures that store manure. For example:

- **MPCA's design standards for earthen basins tend to be more stringent than those in other states.**

A 1997 report by the Kansas Legislative Post Auditor compared the designed seepage rates for earthen basins in nine states.[3] The seepage rate is the allowed rate at which liquids from a storage structure may enter the ground. Although some seepage will always occur, design standards can minimize the amount. For example, Minnesota typically requires earthen basins to contain a clay liner of at least two feet in depth to achieve its seepage limit of 1/56 inch per day. According to the Kansas report, Minnesota and Missouri had the most stringent seepage rate standards. Wisconsin had no standard and Kansas and Nebraska allowed 14 times as much seepage as Minnesota. In addition:

MPCA's current design standards for manure storage structures appear to be adequate.

- **MPCA has guidelines for the construction of concrete pits that help to minimize the chance that these structures will leak or collapse.**

Design standards are an important safeguard, but they do not guarantee the efficacy of manure storage structures with respect to water quality. To better assess whether such structures have a direct impact on water quality, MPCA has begun ground water monitoring on 17 feedlot sites across the state. The monitoring is to determine whether any of the manure storage systems at the sites show evidence of contaminating ground waters. Fourteen of the manure storage systems are earthen basins and three are concrete pits, and all have a design capacity between three and ten million gallons. Monitoring techniques include monitoring wells only, tile lines only, or using a combination of both.[4] Based on this monitoring, we conclude that:

- **To date, ground water monitoring shows little evidence of contamination from manure storage structures.**

MPCA collected baseline data for all but three of the sites. Some of the baseline readings showed high levels of one or more of the following: nitrates, chlorides, sulfates, ammonium, phosphorus, or fecal coliform bacteria. However, when comparing baseline data to subsequent sample data, readings remained relatively constant. This means that while some ground water appears to have contamination, the contamination cannot be specifically attributed to the feedlot.[5]

This does not mean that the feedlots do not or will not contribute to ground water contamination. The longest monitoring data available is roughly four and a half years for earthen basins and one and a half years for concrete pits. Contamination

3 Kansas Legislative Division of Post Audit, *Reviewing the Department of Health and Environment's Efforts to Protect Water from Pollution Caused by Confined Livestock Feeding Operations* (Topeka, January 1997).

4 Tile lines are installed under earthen basins to facilitate drainage of soils adjacent to the basin and relieve water pressure that might affect the basin's structural integrity.

5 Readings from one site show the potential of seepage affecting groundwater, with elevated ammonia and chloride concentrations.

due to feedlots may not show up in ground water monitoring data for years. Because the types of manure storage systems monitored—lined earthen basins and concrete pits built in accordance with current MPCA design standards—have gained in popularity only in recent years, information on the long-term viability of these structures does not exist. Therefore:

More information is needed on the potential for contamination from earthen manure storage basins built before 1993.

- **It is unclear what the life expectancy of manure storage structures is or whether significant problems can be expected in the future if the structures deteriorate.**

While MPCA's ground water monitoring program will help clarify this, the program will not provide information representative of manure storage structures across the state. Specifically, the monitoring program will not provide data on the many manure storage structures built prior to these newer concrete pits and lined earthen basins. MPCA's current standards for lined earthen basins, for instance, were first implemented in 1993. As a result, there are many unlined earthen basins in use across the state. Because these basins have been found to leak and cause contamination in other states, it is important to know what problems they may be causing in Minnesota. MPCA recognizes this need, and is planning to participate in research next year that examines potential leakage problems from older manure storage structures using a geoprobe instrument.[6] Additionally, the ground water monitoring program will not provide information on newer facilities that may not have been given the attention of the 17 sites under the program.

Application Review

Plans and specifications for manure storage systems are just one piece of information submitted with a feedlot permit application. Applicants must also provide information on proposed construction, site location, and manure management. We reviewed a random sample of 5 percent of the 543 certificates of compliance and 328 interim permits MPCA issued between January 1, 1997 and June 30, 1998. We found that generally:

- **MPCA staff review permit applications in an inconsistent manner.**

For example, we found that MPCA issued some certificates of compliance without sufficient documentation that construction requirements were met (such as a post-construction report from the engineer certifying that construction was completed according to design specifications or a permeability test documenting that an earthen basin's seepage rate was within design standards). We also found little written documentation of karst reviews for feedlots built in southeastern Minnesota and inadequate information regarding land application of manure.[7]

6 A geoprobe is an instrument used to draw ground water samples.

7 MPCA has guidelines for conducting specific reviews of feedlots in the karst region.

Construction Requirements

MPCA engineers review plans and specifications for manure storage structures. Once MPCA approves the plans, a contractor may begin the proposed construction. To ensure that the proposed construction follows the engineered plans, MPCA outlines various construction requirements in the permit. These might include notifying the agency during excavation for soils inspections, notifying the agency when construction is complete but before filling the structure for quality assurance inspections, and submitting a post-construction report prepared by the design engineer that verifies the structure was built according to plan and certifies that on-site inspections were conducted by the engineer during construction. Based on our review, we found that:

MPCA has issued some feedlot permits without sufficient documentation that construction requirements were met.

- **Some certificates of compliance were issued without MPCA receiving the necessary documentation required in the permits.**

For example, 2 of the 24 permit files we analyzed for construction requirements were missing the post-construction reports certifying that the structures were constructed according to designed plans and verifying the results of various tests used to guarantee quality assurance. Eight other permit files were missing other required information, such as a soil survey to measure the depth to bedrock, a permeability test to calculate the seepage rate of the constructed earthen basin, and notification to the agency prior to or during construction so MPCA staff could inspect the site at their discretion. When an applicant does not submit all of the information required in the permit, there is less assurance that the structure is environmentally sound.

MPCA recently implemented a construction report review checklist to help staff inventory which of the construction and notification requirements were met by the permittee. While this is a step in the right direction, it falls short in terms of quality assurance. Since the checklist is used as a tool in determining whether the interim permit should be converted into a certificate of compliance, it is completed after construction is finished. Therefore, MPCA staff are unable to conduct inspections prior to and during construction if they do not receive adequate notification. Additionally, it is unclear what penalties, if any, MPCA will impose for failure to meet notification requirements.

Karst Reviews

The state's karst region, located in southeastern Minnesota, represents an area of particular concern in feedlot regulation. Karst is an area characterized by fractured bedrock, sinkholes, and underground caverns and streams.[8] Ground water is particularly vulnerable to contamination from feedlots in the karst region because those contaminants can more readily penetrate bedrock and reach ground or surface waters.

MPCA has made improvements in its recognition of sensitive karst geology. The agency has sent staff to classes that feature karst education and has developed and

8 A sinkhole is a depression in the landscape where bedrock has dissolved.

modified guidelines for permit application review in karst areas. However, although MPCA requires a karst review for feedlot applications in the karst region, we found that:

- **Often no written record of the required "karst review" was on file for feedlots built in southeastern Minnesota.**

MPCA has not always been thorough in its review of permit applications in southeast Minnesota's geologically sensitive "karst" area.

Five feedlots in our sample were located in the karst region.[9] An engineer's checklist revealed that four of the five received a karst review. However, only one file documented detailed sinkhole information. We saw no evidence in the files of formal reviews done for any of the sites. While three files contained a description of their karst risk (two located in moderate to high risk areas and one in a moderate to low area), we found no documentation of sinkhole map reviews or on-site investigations.[10] Moreover, the files contained no information on other karst features such as disappearing streams, caves, and springs. With no written records of karst reviews, it is uncertain whether MPCA adequately evaluated all potential pollution hazards in the karst region prior to issuing the permits.

In addition to the type of manure storage system a feedlot will have, land application of manure is important in determining risk to the karst area. Because of karst features like fractured bedrock, sinkholes, and underground caverns and streams, land application of manure can more easily contaminate ground water. We found that MPCA took no extra precautions for manure management at feedlots in the karst area. Three of the five feedlots we reviewed from the karst region submitted detailed manure management plans on their own initiative (as MPCA requests), while the other two simply provided the number of acres available for spreading manure and the type of spreading method to be used, as required on the current permit application. MPCA needs to pay particular attention to manure management practices in the karst area to minimize inherent risks.

MPCA's draft guidelines for manure storage systems in the karst region address some of these concerns. The guidelines suggest that decisions for granting manure storage systems in the karst region should be based on information pertaining to sinkholes, bedrock, soil and subsoil types, and other notable karst features (such as underground streams and caves). The guidelines provide that this information be obtained through existing sinkhole maps and field investigations. While it is unclear who will be conducting these field investigations (MPCA staff or other individuals), incorporating site visits to assess in person the karst geology of a site would improve the information on which MPCA bases its permit decisions.

9 Two of the five had certificates of compliance and three had interim permits.

10 The other two sites had no information pertaining to their karst risk. One file indicated a review had been completed in the past. The other site was identified as an existing pollution hazard, and issued an interim permit requiring the producer to submit a plan and schedule to prevent manure-contaminated runoff. The interim permit has since expired, and to date the producer has met none of the requirements.

Manure Management

Proper land application of manure protects water quality by ensuring that manure is applied to cropland at appropriate levels. Current MPCA rules require feedlot permit applicants to submit a manure management plan that describes manure handling and application techniques and acreage available for manure application. MPCA has incorporated these requirements into the permit application, asking feedlot owners to indicate the number of acres available for spreading manure and the method to be used. MPCA uses this information to assure that there are enough acres to spread the manure and that the method of spreading manure is appropriate. We found several problems with these current manure management plans. In our view:

- **Manure management information currently required by MPCA is inadequate.**

The information currently provided by most applicants, particularly those with smaller feedlots, is generally too vague to adequately assess the true needs of the site. For proper manure management, a manure management plan should include a nutrient analysis of the manure generated and soil tests of the land on which the manure will be applied. Manure nutrient analysis is essential to precise manure management, since there can be wide variability in the nutrient value of manure. Without nutrient analysis, manure could be overapplied and could negatively affect the quality of ground and surface water. Soil analysis of phosphorus is particularly useful in certain environmentally sensitive locations to avoid excess application of phosphorus and potential negative impacts on surface water. MPCA is working on rule changes that may address these concerns about nutrient analysis and soil testing.

MPCA does not typically verify the number of acres a feedlot owner has available for manure application.

We also found that MPCA does not typically verify the acreage information provided by the feedlot owner on the number of acres available for land application of manure. Moreover, the information provided may not always be accurate. For instance, we found discrepancies in six permit files between the number of acres the feedlot owner noted as available for land application of manure and the number available according to aerial photographs. In two of these instances, MPCA noted the discrepancies; in the other four instances, the discrepancies were not noted in the files.

Site Visits

In reviewing permit applications, it is useful to inspect the site to gain a better understanding of the geological conditions and the presence of environmentally sensitive areas such as wells and sinkholes. For example, karst experts have told us that topographic maps do not always include all the sinkholes in an area. There may also be wells and tile inlets that the feedlot owners did not include on the application.[11] Site visits provide the best opportunity to identify such environmentally sensitive features. Site inspections prior to permit approval are

11 Tile lines are used to drain land and make it suitable for crop production. Tile inlets are the places where water enters a tile line system.

useful to verify information on the permit application and to evaluate the site's potential for pollution. This is particularly important to address the concern that feedlot owners may not provide adequate information on pollution hazards in their applications. Inspections during and after construction are useful to ensure that facilities, such as underground concrete pits, are constructed according to specifications (e.g., not built on bedrock) and environmentally sound (e.g., no significant cracks).

In our sample of permit applications, we looked for evidence in the files that MPCA conducted site visits. We found that:

MPCA does not conduct enough site visits prior to permit approval and during construction.

- **MPCA permitting staff do not normally conduct a site visit when they review a permit application.**

Seven of the 40 (18 percent) permit files we reviewed for inspections contained evidence that MPCA conducted a site visit. Four of the site visits were to investigate potential pollution problems and one was a post-construction inspection.[12] MPCA staff told us that the agency has not normally conducted a site visit when reviewing a permit application.[13] While they acknowledge that a site visit could provide useful information, MPCA staff have felt that their limited resources could be used more effectively to review construction plans, topographic maps, aerial photographs of the site, manure management plans, and information provided by the permit applicant to determine whether the proposed feedlot poses a potential for environmental harm. MPCA engineers sometimes made site visits when they had specific environmental concerns about a feedlot, such as an open lot located close to surface water. Sometimes they asked someone from a regional office to visit the site and report on any characteristics of the site that might be a cause for concern. In lieu of site visits during and after construction, MPCA often relied on certification by engineers that the structures were built according to the specifications on file with the agency.

Public Notification

We also found problems with MPCA's implementation of the 1997 public notification law, which requires proposers of new or expanded feedlots of 500 animal units or more to notify neighbors within 5,000 feet within 10 days after a permit application is made and before the permit is issued.[14] MPCA staff have sometimes misinterpreted this law to mean that expansions by less than 500 animal units are not covered even if they expand to more than 500 animal units. In addition, MPCA initially did not require the proposers to submit the notification at the beginning of the application process but rather asked for evidence of the public notification during the engineering review just prior to issuing the permit. As a result, the law was not having the intended effect because citizens were being notified of a feedlot application just days prior to permit

12 We were unable to determine the nature of the remaining two site visits.

13 MPCA claims to have made over 1,200 site visits in 1997, but staff were unable to provide us with specific details of those visits. We asked MPCA to keep a log of site visits conducted from June through September 1998. The information provided, although incomplete, indicated that the majority of site visits conducted were in response to complaints and enforcement actions.

14 See *Minn. Stat.* §116.07, subd. 7a.

issuance and well after the ten-day grace period after application submittal. MPCA has since changed how it is implementing this law and now considers a permit application incomplete until an applicant provides evidence of public notification. The agency believes this change will prevent further problems of this sort.

Processing Time

As described in Chapter 1, MPCA's process for reviewing permit applications has several steps. After an application is received by the agency, staff conduct an initial completeness review to determine whether the applicant has sufficiently completed the application. Based on this review, MPCA sends a letter of completeness informing the applicant that the application is under review or instructing the applicant of additional information necessary before review of the application can commence. After the application is complete, an engineer completes a more thorough review of the application, evaluating the site's potential for pollution and the engineering plans submitted for new construction. Based upon the engineering review, MPCA issues either a certificate of compliance or interim permit.

It takes MPCA a long time to issue some permits.

MPCA does not regularly track how long it takes to issue an interim permit or certificate of compliance, although staff could do so by transferring information from a database the agency maintains on permit applications to a database with information on permits. Because of the lack of sufficient tracking, we examined processing time by reviewing a random sample of 5 percent of the 543 certificates of compliance and 328 interim permits MPCA issued between January 1, 1997 and June 30, 1998. We found that from the time the agency received a feedlot application:

- **MPCA took a median of 61 days to issue a certificate of compliance and 113 days to issue an interim permit.**

There are many reasons for delays in feedlot permit issuance, including local opposition to feedlots, petitions for Environmental Assessment Worksheets, large numbers of permit applications received in a given month, inadequate engineering plans and incomplete applications. However, based on our sample:

- **The main cause of delay in issuing permits was the backlog of permits at MPCA.**

Our sample of permit applications suggests that it takes about one to two months between the time MPCA determines that an application is complete and the time an MPCA engineer begins to review the application.

In our survey of delegated counties, we asked county feedlot officers for their opinions on the adequacy and timeliness of MPCA's permit review. Of those that answered, 49 percent thought the adequacy of MPCA permit review was "very good" or "good," 32 percent thought it was "fair," and 20 percent "poor" or "very poor." None of the feedlot officers that responded thought the timeliness of MPCA permit review was "very good;" 17 percent thought it was "good," 26 percent "fair," and 57 percent "poor" or "very poor."

Interim Permits

MPCA typically issues interim permits for ten months, after which they expire. Within these ten months, applicants must adhere to conditions outlined by the agency in the interim permit. Conditions generally cover pre- and post-construction notification and reporting, operation and maintenance, and manure management. Once an applicant completes construction and provides verification to MPCA that the interim permit conditions have been satisfactorily met, MPCA can convert the interim permit to a certificate of compliance. We found that:

- **MPCA does not adequately follow up on interim permits.**

MPCA does not normally follow up on interim permits, and many of them have expired.

MPCA has several file cabinets full of interim permits, many of which have expired. Our sample of interim permits revealed that more than two-thirds had expired at some point. Nearly half had expired and had not to date been converted to certificates of compliance.

NPDES Permits

MPCA also needs to bring its permitting practices into compliance with federal rules. These rules require animal feedlots to obtain National Pollution Discharge Elimination System (NPDES) permits if they have over 1,000 animal units. They also have to obtain an NPDES permit if they have more than 300 animal units and discharge directly into navigable waters through a man-made ditch, flushing system, or similar man-made device or if waters originating outside of the feedlot come into direct contact with the animals.[15] As of October 1998, however, MPCA has issued only 23 NPDES permits despite having issued over 600 permits for feedlots with over 1,000 animal units. MPCA staff told us that the federal requirements have been unclear in the past and that other states have also not issued NPDES permits for all of their large feedlots.

MPCA is not currently in compliance with federal regulations that require all feedlots with 1,000 or more animal units to obtain an "NPDES" permit.

In order to get MPCA in compliance with federal requirements, the 1998 Legislature set a schedule for MPCA to issue NPDES permits to all feedlots that require one. The 1998 legislation requires MPCA to issue either an "individual" or a "general" NPDES to all feedlots with 1,000 or more animal units by January 1, 2001.[16] An individual permit contains conditions that are specific to a particular feedlot, while a general permit contains conditions that apply to all feedlots within a general category. Prior to the issuance of a general NPDES permit, MPCA must hold at least one public hearing. To the extent practicable, the agency must provide public notification and an opportunity for public comment before issuing an individual NPDES permit.

The 1998 Legislature also requires MPCA to issue an individual NPDES permit to any newly constructed or expanded feedlot with 2,000 or more animal units. Newly constructed or expanded feedlots with 1,000 to 1,999 animal units will have to obtain either an individual or a general NPDES permit. The type of

15 *40 CFR* sec. 122.23 (1997), Appendix B.

16 *Minn. Laws* (1998), ch. 401, sec. 43 and *Minn. Stat.* §116.07, subd. 7c.

permit required will depend on criteria to be established by MPCA. The legislation requires the criteria to be based on the facility's design and proximity to waters of the state, as well as other site-specific environmental factors. MPCA must also develop criteria for determining what type of NPDES permit existing facilities of 1,000 animal units or more must obtain. This second set of criteria must be based on past violations and other compliance problems at a feedlot.

ENVIRONMENTAL REVIEW

Environmental assessment worksheets are required for certain large feedlots.

Another important function performed by MPCA and sometimes by counties is the environmental review of certain proposed feedlots. According to rules established by the Environmental Quality Board (EQB), an environmental assessment worksheet (EAW) must be prepared for any proposed new total confinement feedlot with a capacity of 2,000 or more animal units or an expansion of an existing total confinement feedlot resulting in an increase in capacity of 2,000 or more animal units. For partial confinement facilities, an increase in capacity of 1,000 or more animal units requires an EAW.[17] EQB's current rules also require two or more "connected" feedlot projects to be considered as one large project for the purpose of determining whether the project is large enough to require an EAW. Some swine feedlot projects have been found to be connected because one proposed facility will raise nursery pigs that will be fed and finished at other proposed facilities.[18]

For large projects requiring an EAW, MPCA is generally responsible for preparation and review of environmental documents. The project proposer or the proposer's consultant usually submits information to MPCA using a standard form. MPCA staff also ask for additional information as is appropriate to the project. Comments are then solicited from the public and other agencies during a 30-day period. MPCA staff then prepare findings of fact and conclusions, and generally the MPCA citizens' board makes a final decision on whether an environmental impact statement (EIS) should be prepared for a project. According to EQB rules, an EIS must be ordered if a project has the "potential for significant environmental effects."[19] In making this decision, the MPCA board must consider four factors: 1) the type, extent, and reversability of environmental effects; 2) the cumulative potential effects of related or anticipated future projects; 3) the extent to which the environmental effects are subject to mitigation by an ongoing public regulatory authority; and 4) the extent to which the environmental effects can be anticipated and controlled as a result of other environmental studies or a previous similar EIS.[20]

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17 *Minn. Rules,* 4410.4300, subp. 29.

18 Hog producers have become increasingly specialized in one or more of the three stages of hog production: nursery, feeder, and finishing. In the nursery stage, sows give birth and their offspring are raised until they are 18 to 21 days old. The feeder stage is characterized by the raising of pigs from nursery operations until they are about 55 pounds each. The finishing stage deals with hogs from 55 pounds to their market weight.

19 *Minn. Rules,* 4410.1700, subp. 1.

20 *Minn. Rules,* 4410.1700, subp. 7.

An EAW may also be prepared for a smaller project if the governmental unit responsible for permitting the facility decides that the project, because of its nature or location, may have the potential for significant environmental effects. The responsible governmental unit, which may be either MPCA or a county, may make this decision based on its own knowledge or upon evidence presented to it in a petition signed by at least 25 citizens.[21] A discretionary EAW may not be undertaken for a project that involves an addition to capacity of less than 100 animal units unless the project is located within certain environmentally sensitive areas specified in EQB rules.[22] Finally, an EAW may be done at the request of a project proposer even though it is not mandatory or ordered by a government agency.

The stated purpose of environmental review is to understand the impact a proposed project may have on the environment and to assist government units responsible for authorizing a project in avoiding or minimizing adverse environmental effects. Environmental review is not intended for the purpose of approving or denying a feedlot permit. Indications of adverse environmental effects do not necessarily have to result in denial of a permit.[23]

Workload

MPCA experienced a dramatic increase in its environmental review workload in 1998.

During calendar year 1998, MPCA experienced a dramatic increase in its environmental review workload. The number of environmental assessment worksheets assigned to MPCA in 1998 will be more than double the average for the last three years. As of mid-October 1998, MPCA had been assigned 22 EAWs compared with an annual average of about 10 for the years 1995-97. There has also been an increase in the number of citizen petitions for EAWs assigned to MPCA. As of the middle of October, the number of petitions had grown from an annual average of 8 in 1996 and 1997 to 12 in 1998.

The increase in EAWs is largely due to changes in the livestock industry that have resulted in much larger feedlots being built. The increase in EAWs and petitions may also be the result of a temporary increase in feedlot construction caused in part by proposed legislation during the 1998 legislative session that would have set a moratorium on feedlot construction and expansion. To a lesser extent, the recent application of the EQB's "connected action rule" to multi-site swine facilities has also tended to increase the EAW workload. The increase in citizen petitions may reflect growing awareness of and concerns about feedlot projects.

The result of the dramatic growth in MPCA's environmental review workload has been delays in completing EAWs. Under normal conditions, MPCA had been able to complete routine EAWs in three to four months. According to MPCA, the process is now taking five to nine months. MPCA's ability to promptly respond to citizen petitions has also been affected. These delays are a problem for livestock

21 *Minn. Rules*, 4410.1000, subp. 3 and 4410.1100, subp. 1.

22 These environmentally sensitive areas include shoreland, delineated floodplains, state or federally designated wild and scenic river districts, the Minnesota River Project Riverbend area, and the Mississippi headwaters area. See *Minn. Rules*, 4410.4600, subp. 19.

23 *Minn. Rules*, 4410.0300, subp. 3.

producers who operate in a very competitive industry and whose business plans are disrupted. They are also troublesome for citizens concerned about feedlot expansion plans because they cause additional uncertainty and anxiety over the future of their living conditions.

As mentioned in Chapter 1, MPCA has responded to the increased workload by assigning additional staff to environmental review activities. Two additional staff have been assigned to work on EAWs full-time for nine months during fiscal year 1999.

Outcomes

MPCA grants few citizen petitions for EAWs and it rarely recommends that an environmental impact statement be prepared.

No feedlot EAW has ever resulted in the preparation of an environmental impact statement, and very few citizen petitions for EAWs are granted. MPCA staff have recommended an EIS on three occasions, including two times during 1998. However, MPCA has never undertaken an EIS. Since an EIS would take considerable time to complete and the project proposer would bear the public costs of its preparation, the proposer usually chooses to drop, relocate, or modify the project. Of the three instances in which an EIS was recommended, one project was dropped, another was later relocated and approved, and the third one is in the process of being modified and resubmitted.

MPCA also rarely grants citizen petitions for EAWs. As Table 2.1 indicates, MPCA has granted an EAW for only 5 percent of the petitions received since January 1996. However, only 26 percent of the citizen petitions to MPCA have been denied. In 21 percent of the cases an EAW was done because MPCA staff determined it was mandatory, and in 32 percent of the cases the proposer dropped the project.

Similar to MPCA, counties have granted an EAW in only 9 percent of the cases. However, unlike petitions to MPCA, the vast majority of petitions to counties are denied. About 73 percent of the EAW petitions assigned to counties since January 1996 were denied. None of the feedlot proposals that were the subject of petitions assigned to counties were dropped by the proposers.

It would be misleading, however, to measure the value of environmental review solely on the basis of how many EISs were recommended or how many citizen petitions for EAWs were granted. Therefore, we reviewed a sample of EAWs done by MPCA and a number of citizen petitions decided by MPCA. We found that:

- **The main value of the environmental review process is its effect on permitting conditions for projects undergoing environmental review and on MPCA policies affecting future feedlot projects.**

Table 2.1: Citizen Petitions for Environmental Assessment Worksheets, 1996-98[a]

	Petitions Assigned to:	
Number	MPCA	Counties
Assigned	28	15
Resolved	19	14
Percentage[b]		
EAW Granted	5%	9%
EAW Became Mandatory	21	9
Petition Denied	26	73
Project Dropped by Proposer	32	0
Other[c]	16	9

[a]Data cover the period starting in January 1996 and ending in mid-October 1998.

[b]Pending petitions and those without a known outcome were excluded in calculating these percentages. There are three county petitions for which our sources do not identify an outcome.

[c]This category includes petitions no longer relevant due to local government action, petitions dropped by the petitioners, and projects exempt from petitions.

SOURCE: Minnesota Pollution Control Agency and *EQB Monitor*.

The environmental review process enables MPCA to devote significantly more attention to environmental issues and to receive more citizen input than is typically the case with permit applications not subject to environmental review. As a result, environmental review has caused MPCA to impose new conditions on projects when citizen input or other information has shown that environmental problems may result from the project. An example of such a condition is the imposition of special restrictions on the land application of manure, such as application setbacks from environmentally sensitive areas or requirements that manure be injected rather than sprayed.

Public input has been valuable during the environmental review process.

Overall, we think that:

- **MPCA has improved its environmental review of feedlot projects.**

In the past, MPCA was not as sensitive to citizen concerns about potential air quality issues as it had been to water quality issues. However, that appears to have changed in the last year as MPCA has learned more about potential air quality issues and has been able to focus on potential hydrogen sulfide and ammonia emissions rather than generalized concerns about odor. MPCA now uses a model during the EAW process to estimate hydrogen sulfide and ammonia air emissions and is attempting to have the model undergo peer review. This tool

enables MPCA to focus on project proposals that may have significant environmental impacts if not mitigated.[24] Furthermore, as MPCA's hydrogen sulfide monitoring program gains more experience and knowledge about methods of mitigation, MPCA will be able to more effectively use the environmental review process to apply permit conditions that will limit the air quality problems once proposed feedlots are built.

As we discuss elsewhere in this chapter, there is a need for MPCA to implement new feedlot rules. Effective regulation through adequate rules will allow MPCA to proceed through the EAW process without rethinking agency policy in as many cases as in the past and thus will allow livestock producers to have a more dependable timetable and regulatory process. In addition, if MPCA is able to do a better job in the permitting and enforcement areas, the agency could restore a measure of public confidence in feedlot regulation and lessen the need for environmental review to serve as the battleground for most environmental issues surrounding feedlots.

EQB Rule Changes

The Environmental Quality Board is proposing changes to its "connected action rule."

There has been some dissatisfaction with EQB's "connected action rule" that requires multi-site feedlot projects to undergo a mandatory EAW if their combined increase in animal units exceeds 2,000 animal units for total confinement projects or 1,000 animal units for partial confinement projects. MPCA has attempted to enforce this rule by asking proposers of new or expanded swine feedlots about the source of pigs they feed and finish for the market or the destination of nursery pigs they produce for feeding and finishing elsewhere.

One of the problems with the rule is the time-consuming and cumbersome process needed to implement it in the livestock industry. Because a multiple site project may cover more than one county, it is difficult to determine when a project requires an EAW and to coordinate the permitting process. Permits for some of the sites may need to be obtained from MPCA and others may need to be obtained from one or more counties. A second problem with the rule is that it may cause two "connected" sites to undergo an environmental review even though the sites are far enough apart that their environmental impacts are not cumulative. In that regard, the sites may be no different than two unrelated projects and could be considered as separate projects during the permitting process.

In response to such concerns, the 1998 Legislature directed the EQB to reconsider its connected action rule as it pertains to feedlots and to propose changes in the rule if appropriate. The legislation also requires EQB to submit any proposed rule

24 MPCA's transition to a more comprehensive review of air quality issues during environmental reviews has not been without problems and controversy. MPCA's October 1997 decision that a multi-site hog project did not need an environmental impact statement was overturned by a district court judge in September 1998. MPCA's position was weakened because it used air quality modeling after completion of the environmental assessment worksheet and after the MPCA Board's negative declaration on an environmental impact statement rather than during the EAW process as is now done. The project was also the first instance in which MPCA attempted to apply the "connected action" rule to an environmental review. MPCA staff inadvertently approved feedlot permits for some of the hog finishing sites in the project prior to the completion of the EAW.

change and public hearing comments to the Legislature by March 1, 1999 and to wait three months after that date before adopting a rule change.[25]

As a result, the EQB has drafted a proposed rule change that it plans to take to rule hearings in early 1999. The proposed change would eliminate the connected action provision for feedlots and lower the increase in capacity triggering a mandatory EAW for a total confinement facility from 2,000 to 1,000 animal units. The proposal would also require a mandatory EAW for new or expanding feedlots of any size in certain sensitive areas such as shoreland, delineated floodplains, wellhead protection areas, designated wild and scenic river districts, the Minnesota River Project Riverbend area, the Mississippi headwaters area, and any site within 1,000 feet of a known sinkhole. Finally, the proposal would exempt some additional projects from discretionary EAWs. The construction of a new feedlot of less than 300 animal units, rather than the current 100 animal units, would be exempt unless it is in one of the environmentally sensitive areas previously mentioned.

EQB staff initially thought that regulators and parties affected by the connected action rule would be interested in establishing a distance limitation beyond which two feedlot sites that are part of one project would not be considered a connected action. The rationale for that approach is that, beyond a certain distance, the effects of two feedlot sites on the environment are probably not related to one another. EQB staff found that, other than MPCA, none of the affected parties were interested in a distance limitation. They also found that, while environmental groups were primarily interested in having more feedlot projects undergo environmental review, producers were willing to have more projects subject to EAWs if the connected action rule was not applied to feedlots and petitions for EAWs on small feedlots were further restricted. Thus, EQB's proposal represents a compromise between producers and environmentalists.

There is no easy solution to the problems raised by the connected action rule.

There is no easy solution to the problems raised by the connected action rule. EQB's proposal has the advantage of eliminating the administrative complexities involved in administering the rule but has other problems. It would be possible under the proposed rule for a project with multiple sites in close proximity to one another and to residents, businesses, or recreational property to avoid environmental review if the site with the most animals has fewer than 1,000 animal units and none of the sites is within a sensitive area as defined by the rule. Such a project might have significant potential environmental impacts but would only undergo environmental review if a citizen petition for an EAW was submitted and approved or, absent a petition, MPCA or a county recognized the need for review. The latter is less likely to happen under the proposed rule since MPCA would probably no longer collect information that would establish the connectedness of multi-site projects.

We are concerned that the proposed rule change could increase MPCA's workload and that other improvements in feedlot regulation may be a higher priority than increasing the number of EAWs conducted by MPCA. EQB is relying on an MPCA estimate that the net effect of the rule change would be to increase the number of EAWs by 10 to 15 per year. The number of EAWs would increase

25 Minn. Laws (1998), ch. 401, sec. 54.

EQB's proposed rule change may strain MPCA's resources and cause the agency to shift resources from other duties.

primarily because of the lowering of the requirement for mandatory EAWs from 2,000 to 1,000 animal units. The elimination of connected actions would tend to reduce the number of EAWs. It is unclear how the EAW requirement for all feedlots in certain sensitive locations would affect MPCA's workload. It may simply discourage feedlots from locating or expanding in these locations. The additional restrictions on citizen petitions would probably have less impact on MPCA's workload than the changes affecting EAWs, since few petitions for feedlots of that size are received now and the amount of staff work on each petition is significantly less than on each EAW.

It is difficult to estimate MPCA's future EAW workload because MPCA cannot readily analyze past trends. Over the three-year period 1995-97, MPCA approved an average of about 125 permits annually for feedlots with 1,000 or more animal units and completed EAWs on about 12 of these feedlots annually. MPCA is unable to determine from their computerized database how many of these permits were for new or expanded facilities rather than existing facilities and is also unable to determine how many facilities expanded by at least 1,000 animal units and would need a mandatory EAW under the proposed rule. To estimate how the proposed rule would affect MPCA's workload assuming a continuation of past trends in permit applications, MPCA would have to examine individual permits issued during a recent time period. MPCA has not attempted to do this; as a result, there is reason to question whether the estimate MPCA provided to EQB is representative of past trends.

Even with better data on past trends, it would be difficult to estimate the annual number of EAWs under the proposed rule change. The number of new feedlots or large expansions in future years will likely depend on market forces. If recent trends in prices continue, the number of large hog projects will probably decline, while the number of large dairy projects may increase. Whether price trends will continue and how exactly they will affect construction plans is unknown. In addition, implementation of the proposed rule could cause livestock producers to downscale expansion plans to just under 1,000 animal units to avoid an EAW.

We understand the process EQB and its staff went through in developing this proposed rule change and why they did not instead pursue a modification to the connected action rule. We are also supportive of the environmental review process because we believe it has helped improve the permitting process at MPCA. However, we are concerned that the proposed rule may result in an increase in MPCA's workload. We think that other needed improvements in the regulatory process should be given a higher priority than increasing the number of EAWs.

OVERSIGHT

Feedlot regulation should not focus entirely on the issuance of permits. There is a need for ongoing oversight of permitted facilities and scrutiny of unpermitted feedlots as well. A regulatory agency needs a way of identifying whether all facilities needing permits are obtaining permits. A detailed feedlot inventory can help to identify facilities needing permits as well as facilities with previously unknown pollution problems. In addition, it is considered a good management

practice for the regulatory agency to periodically inspect all permitted facilities on an ongoing basis to ensure that facilities are being operated in accordance with their permits and that pollution problems are not occurring. It is also important for a regulatory agency to ensure that appropriate steps are taken to protect the environment from water pollution when a feedlot closes and is no longer in operation. Finally, good oversight involves prompt response to complaints and enforcement action when necessary. Timely enforcement actions, along with appropriate sanctions, may be necessary to correct pollution problems and to deter violators and others from committing future violations.

In this section, we examine MPCA's ongoing oversight of feedlots. First, we discuss a number of general oversight issues including feedlot inventories, periodic inspections, and feedlot closure. Second, we review MPCA's performance in handling complaints about surface or ground water pollution from feedlots and in taking enforcement action to address water pollution. Finally, we examine MPCA's relatively new program for monitoring air quality at feedlots and achieving compliance with air quality standards.

General Issues

We found that there are significant deficiencies in MPCA's oversight of feedlots on an ongoing basis. For example:

- **There is no statewide inventory of feedlots.**

As we will discuss later in this chapter, only a limited number of counties have done detailed feedlot inventories enabling them to identify where pollution problems exist. MPCA does not attempt to identify feedlots needing permits that have failed to apply for and obtain permits. Some counties with delegated feedlot programs monitor compliance with the requirement to obtain a permit, but other delegated counties do not. MPCA does not monitor compliance in the 40 counties not participating in the delegated feedlot program.

In addition, due to staffing constraints:

There is insufficient oversight of permitted facilities.

- **MPCA does not conduct periodic inspections of feedlots once they are in operation.**

A facility is likely to be inspected only if it is the subject of a complaint or an enforcement action. For similar reasons, counties generally do not conduct periodic inspections, although some counties are hoping to do so in the future. Conducting periodic inspections of operating facilities is a valuable regulatory tool used in a number of other states and would help to ensure that producers feel pressure to comply with their permits. For example, land application of manure is one of the most important areas in which environmental problems might occur if proper management practices are not followed. MPCA has often required feedlot owners to keep detailed records on the land application of manure, but rarely checks if the records are adequate or indicate compliance with permit conditions. A periodic inspection program also helps to ensure that producers do not illegally and inappropriately alter manure storage systems and dispose of manure in an environmentally unsafe manner.

Finally, while MPCA understands the need to ensure that feedlots are appropriately cleaned up when they cease to operate:

- **MPCA has no way to track when feedlots are closed and has insufficient staff resources to check on whether closed feedlots are cleaned up in a timely manner.**

There is little oversight to ensure that feedlots are properly closed.

Similarly, counties do not provide much oversight over the closure of feedlots. A feedlot needs to be closed properly in order to avoid potential contamination of surface or ground water. Manure packed on an open lot needs to be scraped and applied to crop land. If it is not disposed of properly, the ground could develop cracks through which the manure could leach into ground water or precipitation could carry the nutrients in the manure into surface water. Manure in earthen basins, particularly old basins without clay or synthetic liners, needs to be pumped out and land applied. Manure in concrete pits should also be disposed of in a similar fashion.

MPCA and the counties lack adequate resources to implement these components of a good oversight program. But part of the reason for these oversight deficiencies is the lack of adequate MPCA rules. It is difficult to hold all feedlots responsible for good manure application practices when the agency has not established rules defining what those practices are. MPCA developed land application guidelines in 1995 and has made them a requirement in the permits for some livestock producers but is only now attempting to establish land application requirements in its administrative rules.

Similarly, MPCA has issued an information brochure on what it considers to be good management practices for feedlot closure but has had no rules on feedlot closure. Furthermore, MPCA has not typically put feedlot closure requirements in permits, and it does not have a good way of obtaining compliance with good management practices when an operation goes bankrupt. As a result, MPCA has not done much to ensure feedlot closures are done properly. MPCA is now considering rule changes that would spell out the responsibilities of an owner of a feedlot in the event that the feedlot is closed and would require new feedlots and feedlots with more than 300 animal units to have closure plans on file with MPCA. The agency, in conjunction with the Minnesota Department of Agriculture, is also working on a report for the 1999 Legislature on the need and the level of funding required for an animal waste liability account. This study, required by the 1998 Legislature and due by January 15, 1999, is also supposed to address the need for the development of a statewide animal waste contingency plan for animal waste sites, including containment, closure, and cleanup.[26]

Water Quality Complaint Handling and Enforcement

As part of an effective regulatory program, MPCA must ensure that its rules and regulations are followed by feedlot owners. Because it does not do routine

26 Minn. Laws (1998), ch. 401, sec. 56.

inspections of feedlots, MPCA relies primarily on the public to inform the agency when a producer violates feedlot rules or engages in practices that endanger the environment. When it receives a complaint that a producer may have violated environmental laws, feedlot rules, or permit requirements, MPCA generally investigates the complaint. If it finds that the complaint is valid and a pollution hazard exists, MPCA considers taking steps to ensure that the feedlot owner corrects the problem and minimizes the threat of pollution. In some cases, MPCA also pursues sanctions against the violator. Enforcement is important both to correct the immediate environmental threat and to deter the violator and other feedlot owners from committing future violations.

Complaints

We attempted to review MPCA's complaint files to determine how quickly and thoroughly the agency responded to complaints about water quality. We also interviewed some regional staff, and discussed MPCA's response to complaints with county feedlot staff in ten counties that we visited. Additionally, we included a question about MPCA's handling of complaints in our survey of county feedlot officers. We found that:

- **MPCA does not adequately keep records of water quality complaints relating to feedlots, so we were unable to systematically analyze the agency's timeliness and thoroughness of complaint investigations.**

MPCA's feedlot complaint log is inadequate and is not utilized by all feedlot staff.

MPCA started to keep a feedlot complaint log in April 1997, but not all feedlot staff have been using it.[27] Also, the log does not always identify the feedlot owner's name, dates of MPCA inspections, the specific actions taken, and the ultimate outcome of the investigation. Thus, it was impossible for us to systematically measure the timeliness and adequacy of MPCA's response to complaints.[28] MPCA staff were also unable to provide us with files relating to some of its complaint investigations and the files we did review contained very little information.[29]

Although we were unable to systematically analyze MPCA's response to the complaints, there are some indications that the agency has satisfactorily responded to complaints. Most of the enforcement cases we discuss in the next section began with a complaint. In all of these cases, either MPCA or county feedlot staff made a site visit within one or two days. In cases where they substantiated the

27 For example, the Rochester and Detroit Lakes regional offices did not enter their complaint investigations in the complaint log.

28 As of August 1998, there were 125 complaints listed on the complaint log. Forty (32 percent) of those complaints involved feedlot runoff from open lots reaching waterways or drainage ditches, 28 complaints (22 percent) involved stockpiling or dumping manure near or in a waterway or ditch, 17 (14 percent) involved improper application of manure (such as overapplication or spreading manure too close to a waterway or ditch), 13 (10 percent) were related to earthen basin or concrete pit leaks or overflows, and 12 (10 percent) were related to nuisance conditions (odor and flies).

29 MPCA's Air Quality division keeps a separate complaint log relating to complaints about odor and air quality violations. That log is more detailed and comprehensive. We discuss odor and air quality issues elsewhere in this report.

complaint, MPCA usually revisited the site to conduct further analysis or see if the feedlot owner had taken actions to correct the situation.

Our survey results indicated that 61 percent of county feedlot officers rated the adequacy of MPCA's assistance in investigating complaints as "good" or "very good," and 57 percent rated the timeliness of MPCA's assistance as "good" or "very good." In the counties we visited, county officials were generally satisfied with the responsiveness of MPCA's regional staff to requests for assistance with complaint investigations.

Enforcement

MPCA has several enforcement tools at its disposal, including administrative, civil, and criminal penalties.

When MPCA investigators believe that a feedlot owner has violated permit conditions, feedlot rules, or state environmental laws, it convenes a "forum" of MPCA staff to discuss the case and arrive at a consensus regarding the appropriate enforcement action to take. Under state law, MPCA has several enforcement tools at its disposal. These include a notice of violation, an administrative order, an administrative penalty order, a civil court action, a stipulated settlement, and criminal prosecution.

A notice of violation (NOV) is a warning that the feedlot is in violation of permit conditions or agency rules and that a more serious sanction will be pursued if the feedlot owner does not take steps to return to compliance. There is no formal penalty associated with an NOV. When issuing an NOV, MPCA staff hope that a formal written notice will be sufficient to entice the offending feedlot owner to avoid future consequences by correcting the pollution hazard and bringing the feedlot into compliance with agency rules. An administrative order is a directive requiring a feedlot owner to correct potential pollution hazards, submit reports, or otherwise change operations so as to comply with permit conditions and agency rules. While there is no penalty involved, failure to comply may be grounds for other enforcement actions.

An administrative penalty order (APO) is a monetary penalty up to $10,000 that MPCA may issue for violations of state environmental laws, agency rules, or permit conditions.[30] State law requires MPCA to forgive penalties if the violation is corrected, but penalties for serious and repeat violations may be nonforgivable.[31] In practice, MPCA uses enforcement guidelines and a penalty calculation worksheet to determine the amount of the penalty and whether all or part of it should be forgivable. The calculation includes an evaluation of the extent of noncompliance, the threat of environmental harm, the willfulness of the violation, whether it is a repeat violation, how much money the violator saved by not complying with environmental regulations, and other factors unique to the situation.[32] MPCA staff do not need approval from the agency's citizen board to

30 *Minn. Stat.* §116.072.

31 *Minn. Stat.* §116.072, subd. 5.

32 Before it issues an APO, MPCA sends a letter to the feedlot owner outlining the violations and giving the alleged violator ten days to dispute the facts or explain any mitigating circumstances. MPCA staff consider the response to this "ten-day letter" in determining the final penalty.

issue an APO, but parties receiving an APO may appeal the action to the agency's commissioner and to the district court.

MPCA may also file a petition with the district court to impose civil fines of up to $10,000 per day for violations of environmental laws, agency rules, permit conditions, or conditions of stipulation agreements.[33] MPCA enforcement staff told us that they rarely go to court to enforce a civil penalty against a feedlot owner. Rather, they use the threat of civil court action to negotiate a stipulation agreement. The agreement may contain an up-front monetary penalty. It also contains deadlines for the feedlot owner to make specific improvements to eliminate the pollution hazard, with penalties for failing to meet those deadlines. MPCA prefers to use stipulation agreements when there is a historical pattern of violations or ongoing conditions that must be monitored to ensure future compliance. When pursuing civil remedies, MPCA obtains legal assistance from the Attorney General's Office.

Finally, MPCA staff may work with the local county attorney to bring criminal charges against a violator of state environmental laws. MPCA staff told us that they pursue criminal penalties when the violation represents a deliberate attempt to avoid the law. A typical violation is failure to notify authorities when a discharge of pollutants occurs and failing to take action to minimize the effects of the discharge.[34] It is not necessary to prove that actual pollution occurred to obtain a conviction under this statute. Another violation is constructing or operating a disposal system without a permit.[35] For the most part, environmental law violations are misdemeanors, but in some cases, a violator may be charged with a gross misdemeanor or felony.[36] As we discuss below, MPCA's ability to use criminal sanctions depends upon the willingness of the local county attorney to file charges.

We reviewed agency files relating to 18 enforcement actions taken by MPCA against feedlot owners.[37] We also discussed these cases with MPCA enforcement staff and, in some cases, with county feedlot staff. We found that:

- **MPCA has taken several significant enforcement actions that have resulted in penalizing feedlot owners and correcting conditions and practices that posed a threat to water quality.**

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33 *Minn. Stat.* §115.071, subd. 3.

34 *Minn. Stat.* §115.061.

35 *Minn. Stat.* §115.07, subd. 1. This statute also applies to extensions or modifications of existing disposal systems without obtaining a permit (subd. 3).

36 *Minn. Stat.* §115.071, subd. 2 states that violations of environmental statutes are misdemeanors. However, *Minn. Stat.* §609.671, subd. 8 says that a person who knowingly violates any water quality standard may be punished by up to one year in jail and a fine of between $2,500 and $25,000 per violation. The penalty may be doubled for subsequent offenses. Under *Minn. Stat.* §609.671, subd. 9, a person who knowingly fails to obtain a permit or falsifies or makes false material statements relating to a permit may be punished by up to two years imprisonment and a fine of up to $10,000.

37 We selected for review all enforcement cases for violations discovered between January and June 1997, all cases resulting in a fine over $10,000, all cases opened prior to January 1997 that remained open as of June 1998, and cases of facilities that received more than one enforcement action. In all, we asked to see 22 files, but MPCA staff could not locate 4 of them.

However,

- **MPCA takes a long time to complete enforcement actions, and some uncooperative feedlot owners have been able to avoid enforcement for several years.**

Until recently, MPCA had one compliance coordinator for feedlots who kept track of all enforcement cases and was the lead investigator on some of them.[38] For the most part, however, MPCA has relied on its regional staff to investigate allegations of violations of state laws, agency rules, and permit conditions and to take action when warranted. We found that some regional staff are more aggressive in pursuing enforcement actions while others generally choose not to pursue enforcement. As a result, enforcement caseloads are uneven and those staff with large caseloads have trouble keeping up, resulting in delays in enforcement actions. We found other reasons for delays, including the reluctance of some county attorneys to file criminal charges and the reluctance of MPCA to take formal court action when feedlot owners fail to comply with their orders.

MPCA's regional staff have been inconsistent in pursuing enforcement cases.

In the remainder of this section, we present several case summaries that illustrate successful enforcement actions that resulted in correcting environmental hazards and sanctioning violators. We also show examples of enforcement actions that did not adequately resolve the environmental concerns or did not result in prompt resolution of the problem.[39]

The following case summary shows how MPCA worked with a local county attorney to successfully prosecute a farmer whose failure to take prompt action to mitigate a manure spill resulted in a significant fish kill:

- In June 1997, a pump used to flush out a concrete pit on a hog farm malfunctioned. As a result, the pit overflowed onto the barn floor and manure-contaminated water flowed out the door, into a tile intake, and eventually into a creek. The farmer waited three days before reporting the overflow to MPCA. The Department of Natural Resources (DNR) estimated that over 600,000 fish died as a result of the spill. MPCA and DNR staff worked with the county attorney to file criminal charges against the farmer. In February 1998, the farmer pleaded guilty to failing to notify authorities of a discharge and failing to take steps to mitigate pollution. He was sentenced to one year in jail, but all except one month was stayed. He was also ordered to pay a criminal fine of $2,500, a $2,500 civil penalty, $2,984 to MPCA for investigation expenses, and $40,020 restitution and expenses to DNR for the fish killed.

MPCA staff told us that they often have difficulty convincing county attorneys to file criminal charges for environmental law violations, especially when there is no direct evidence of environmental damage. Many county attorneys have busy

38 Under MPCA's reorganization, the agency will have ten compliance coordinators. After they are trained, each will be responsible for managing all types of enforcement cases, including feedlots.

39 We prepared the case summaries discussed in this section from notes, correspondence, and reports contained in MPCA files.

caseloads and assign higher priority to violent and property crimes. The following example is a case where MPCA staff believed that criminal charges were appropriate but the county attorney decided not to prosecute:

County attorneys do not always cooperate with MPCA staff on criminal prosecutions.

- In February 1997, an MPCA investigator and the county feedlot officer investigated a complaint against a feedlot and found that 35,000 to 40,000 gallons of manure had been dumped in the snow on a hillside. Some of it had already reached the waterway at the bottom of the hill. The feedlot owner told the investigators that a concrete manure storage pit was getting full so he hired a manure pumping service to empty the pit and spread the manure on the field. The manure hauler claimed that the farmer did not want to pay for spreading and told him just to dump the manure. The investigators found that the farmer did not have a feedlot permit and that the manure hauler was also emptying septic tanks without the required license. The MPCA investigator referred the case to the county attorney in August 1997.

  Eight months later, the county attorney wrote that he was declining to prosecute. His letter noted that the feedlot owner had cleaned up the mess and filed a permit application. He also said that the manure hauler was probably most culpable for dumping the manure, but that he was cooperative with the investigation and had been "educated." The county attorney also noted that there was no proof of actual environmental damage such as a fish kill or contaminated drinking water, although he acknowledged that actual proof of environmental harm was not required to prove a violation. He concluded that he did not think the case merited prosecution. After the county attorney declined to pursue the case, the agency decided not to take action due to the long delay since the initial violation.

An administrative penalty order (APO) can be issued by the agency without the time-consuming process of preparing and filing legal briefs and scheduling and conducting court hearings. It has the potential for providing swift punishment for environmental violations and quick resolution of environmental problems, as the following case summary shows:

- In May 1997, MPCA responded to a complaint at a cattle feedlot and found that manure was flowing through a culvert to a drainage ditch. MPCA issued an APO in August 1997. It contained a forgivable $2,500 penalty and required the feedlot owner to submit a new permit application with a manure management plan and proposed facility modifications. The farmer submitted a feedlot application in September 1997 that proposed moving a fence farther from the ditch and reducing the number of cattle. MPCA forgave the penalty and issued a new certificate of compliance.

Although administrative penalties have the potential for quickly punishing feedlot owners who violate permit conditions or agency rules, we found several cases where uncooperative feedlot owners delayed and avoided making required improvements. The following case is an example:

- In August 1996, MPCA staff investigated a complaint that manure from a feedlot was floating in a ditch. The feedlot owner did not have a permit. In November 1996, MPCA issued an APO with a $2,500 forgivable penalty requiring the farmer to submit a permit application within 30 days. Instead, the farmer signed a pollution abatement plan agreeing to remove all livestock from the facility and clean up the manure in the spring. However, the farmer did not remove the animals, saying later that he only agreed to remove the animals from the lot, not the barn.[40]

  MPCA issued a second APO in August 1997, which the farmer ignored. MPCA then filed a motion in district court for the court to order the farmer to comply with the APO. The court issued a default judgment against the farmer in March 1998 for $3,000 plus interest and court costs and ordered him to submit a feedlot permit application within 20 days. The farmer finally submitted a permit application in April 1998, but MPCA permit staff determined that it was incomplete. In July 1998, MPCA petitioned the court to find the farmer in contempt. Instead, the court again ordered the farmer to pay $3,500 in penalties from the previous APO or remove all livestock by September 18 and obtain a valid MPCA feedlot permit. The farmer did remove the animals on September 18, but they were back three days later. In November, the judge referred the case to the county attorney with instructions to file criminal contempt charges against the farmer.

Some uncooperative feedlot owners have been able to avoid changing their environmentally unsafe practices for years.

MPCA uses stipulation agreements when it wants an enforceable document that requires the feedlot owner to make improvements that will reduce the threat of pollution. While the agency could file a petition in court for a civil penalty, it prefers to negotiate with feedlot owners (with the implicit threat of court action) to get them to voluntarily sign a stipulation agreement. This is often a lengthy process, even when the feedlot owner cooperates. If the feedlot owner is uncooperative, the process can take many months or years, as the following case indicates:

- A feedlot contained an earthen basin to hold manure and a system of ditches to pump manure to the basin. The original permit required the feedlot owner to pump manure and wastewater from the basin whenever the liquid level was within one foot of the top, but no pumping was conducted between 1978 and 1997. In August 1995, MPCA staff inspected the facility and found the level of the basin to be six inches from the top. MPCA concluded that, since the basin had never been pumped out, it must be leaking for it to maintain that level. MPCA wrote to the feedlot owner in November 1995 requiring that he file a permit application, including among other things an analysis of the earthen basin. The owner filed an application in December 1995 without the required evaluation of the basin.

40 The agreement actually said he would remove the animals from "the site."

In January 1997, MPCA sent the feedlot owner a draft stipulation agreement requiring him to submit a revised manure management plan and an abandonment and remediation plan for the earthen basin by February 1997. In February 1997, the feedlot owner responded with a proposal to construct a concrete pit by summer 1997 and remove manure from the basin by fall 1997. MPCA accepted that schedule. The feedlot owner did not sign the proposed stipulation agreement, however, and he did not follow through on his proposals.

MPCA sent a revised stipulation agreement to the feedlot owner in April 1998. It required the owner to submit a remediation plan for the basin, a manure management plan for ongoing operations, and plans for construction of a concrete pit by May 1998. He also had to complete actual construction of the pit and cease using the earthen basin by September 1998. The agreement included a $10,200 civil penalty and penalties for missed deadlines.

The feedlot owner did pump out the basin (spray irrigating the contents on his cropland in violation of a county ordinance requiring injection or incorporation of manure) and he sent in two $850 checks in partial payment of the penalty. However, he refused to sign the stipulation agreement, claiming there was no proof that his feedlot polluted the environment. MPCA wrote to the feedlot owner in July 1998 threatening court action if he did not sign the stipulation agreement by August 1998. In September 1998, MPCA sent a revised stipulation agreement with increased penalties and again threatening civil litigation. Meanwhile, the 1998 construction season ended without any action. MPCA staff now say that the feedlot owner has plans to expand and they will not let him do so unless he signs the stipulation agreement and corrects existing problems.

Uneven caseload distribution within MPCA contributes to delays in enforcement actions.

MPCA management does not have a formal system of assigning cases to staff and managing the progress of cases. Consequently, some MPCA enforcement staff have large caseloads and have to prioritize which ones receive prompt attention. On the other hand, feedlot staff in some regional offices do not handle enforcement cases thus increasing the workload for other MPCA staff or causing gaps in the enforcement program. As a result, there are often delays in MPCA's handling of enforcement cases, as the following examples show:

- In June 1995, staff from MPCA and DNR conducted a joint inspection of a hog and cattle farm and found that 1) manure contaminated runoff was flowing to a drainage ditch, 2) the facility had more animals than was listed in the certificate of compliance, and 3) the farmer had dumped manure taken from concrete pits instead of spreading it on cropland. MPCA revoked the existing certificate of compliance and requested that the farmer submit a new permit application with a pollution abatement plan. MPCA issued an interim permit in February 1996 that required a plan and schedule to eliminate runoff of manure from the open lots and construction of a manure storage facility.

A May 1997 investigation revealed that a substantial amount of manure had discharged from the feedlot and flowed to a drainage ditch. The inspection also found that the farmer had built a concrete wall with two holes with wooden gates that could be moved up or down. MPCA told the farmer to clean up the manure within 14 days, to seal the gates immediately, and to report in 20 days on progress made on the permanent runoff abatement plan required by the interim permit. Fifteen months later, in August 1998, MPCA sent a letter to the farmer notifying him that the interim permit expired and that the requirements to remove the manure and prepare a permanent pollution abatement plan were not met. The letter asked for a response within ten days. The farmer did not respond to the letter.

The MPCA investigator in that case told us that he has been in contact with the county attorney and expects that criminal charges will be filed in this case. Nevertheless, it has been over three years since the initial inspection revealed pollution problems and over two years since MPCA issued an interim permit requiring the feedlot owner to correct the problems.

- In April 1994, a cattle farmer applied for a permit to expand an existing feedlot. MPCA staff inspected the facility in June 1994 as part of its permit review and noticed that two tile inlets to collect runoff from the barn roofs posed a risk that manure from the open lots might enter them. MPCA issued a certificate of compliance and told the farmer to cap the tile inlets. In May 1996, county officials informed MPCA that manure had been reaching the two tile inlets that the farmer had said he would cap. MPCA again told him to seal the tile inlets. An assistant attorney general prepared a draft stipulation agreement in May 1998, two years after the report of a manure discharge to the tile inlets and four years after MPCA initially ordered the inlets capped, but the stipulation agreement has not yet been presented to the feedlot owner.

The MPCA investigator handling this case told us that he needs to review the draft stipulation before he sends it to the farmer but that he has not had time. He said that he has several open cases as well as other responsibilities. He has been told to prioritize, and there are other cases with a higher priority. He said he did reinspect the site and the tile inlets had been capped.

Long delays undermine MPCA's enforcement efforts and diminish the deterrent value of enforcement.

In our opinion:

- **MPCA has not done an effective job allocating its resources and managing its enforcement caseload.**

MPCA should not wait two years before taking enforcement action. If nothing else, long delays give the appearance that the agency is not very serious about enforcement. In some cases, failure to take swift action means that potential or actual pollution hazards are not resolved. We think that MPCA management could do a better job keeping track of its enforcement caseload. For example,

supervisory staff could monitor cases and make sure that progress is being made on each case. We also think that MPCA needs a consistent enforcement policy. While regional offices should have some discretion in setting priorities, we do not believe they should have so much autonomy that some regions take on many enforcement cases while others take on few or none. Clearer direction and oversight from management would ensure that enforcement responsibilities are shared more equally among staff and that the agency's enforcement policy is more consistent in all regions of the state.

Air Quality Monitoring and Compliance

Historically, feedlot regulators in Minnesota and elsewhere viewed odor as the only major air quality issue associated with feedlots. Little attention was paid to specific air pollutants emitted from feedlots, and odors were viewed as a natural by-product of animal agriculture that was best addressed through local land use planning and zoning.

The trend toward larger feedlots has heightened citizens' concerns about odors and air pollution.

With the movement to larger feedlot facilities—particularly in the swine industry—there has been considerable concern among rural residents about odors from nearby feedlots. By 1997, attention began to focus on hydrogen sulfide. MPCA already had an ambient air standard for hydrogen sulfide which had been established with industries other than agriculture in mind, and citizens had measured hydrogen sulfide around Renville County feedlots at levels potentially above the existing standard.

Hydrogen Sulfide Monitoring

In response to citizens and the Governor's feedlot initiative, the 1997 Legislature required MPCA to develop a protocol for measuring hydrogen sulfide levels, monitor feedlots with suspected odor problems, and take appropriate actions to bring feedlots into compliance with air quality standards. As of September 23, 1998, MPCA staff had monitored 82 feedlots using Jerome meters and found 26 to have potential violations of the standard for hydrogen sulfide.[41] The vast majority of the 26 facilities are swine feedlots. Only five are dairies, and one is a beef cattle operation. Most of the 26 with potential violations are also large feedlots. More than 60 percent have in excess of 1,000 animal units. Most of the hydrogen sulfide problems appear to be associated with outdoor manure storage basins.

41 MPCA's ambient air quality standards are violated if average hydrogen sulfide levels exceed 30 parts per billion for any two 30-minute periods within five consecutive days or 50 parts per billion for any two 30-minute periods within a year. A continuous air monitor is needed in order to measure average hydrogen sulfide levels over a 30-minute period. In contrast, a Jerome meter is more convenient because it is portable but the instantaneous readings it provides cannot be used to document a violation of the air quality standard. Consequently, MPCA uses Jerome meters to determine if a feedlot has the potential to exceed the standard and continuous air monitors to determine, when necessary, whether actual violations of the standard have occurred.

MPCA is working with those facilities identified as having potential violations to identify corrective or preventive measures that will reduce hydrogen sulfide emissions and perhaps odor complaints as well. Livestock producers with potential violations have tried options ranging from covering earthen manure storage basins to using biological/enzymatic additives in these basins. Surfaces of earthen basins have been covered with straw or straw on top of a geotextile mat.

MPCA has a limited number of continuous air monitors that are used to determine whether a facility actually meets or exceeds the 30-minute averages, indicating that a violation has occurred. These monitors have been used at four sites and have documented violations at one of those sites. That site has had multiple hydrogen sulfide readings of 90 parts per billion, well in excess of MPCA's ambient air standards.[42] MPCA has ordered the facility with a documented violation to cover its earthen basins with straw on top of a geotextile mat.

MPCA's hydrogen sulfide monitoring program has become one of the feedlot program's strengths.

Prior to the 1997 legislation establishing MPCA's hydrogen sulfide monitoring and compliance program, MPCA did not have an adequate regulatory response to citizens concerned about feedlot odors and air emissions. It took significant pressure from citizens, as well as citizen monitoring of hydrogen sulfide levels near feedlots, to get the attention of MPCA and other government officials. Despite the contentious nature of this issue, we think that:

- **MPCA has developed a good initial program to respond to citizen complaints about feedlot odors.**

In contrast to its handling of water pollution complaints, MPCA has done a good job of documenting complaints about feedlot odors and air emissions over the last year. MPCA has also responded appropriately to complaints by monitoring air emissions with its Jerome meters in a generally timely manner. The agency has also encouraged producers to employ a mitigation strategy when the Jerome meter readings have indicated a potential to exceed MPCA's hydrogen sulfide standards.

Citizens we talked with have expressed satisfaction with MPCA's air quality monitoring efforts and contrasted those efforts with what they believed were less than satisfactory responses from MPCA on issues involving surface or ground water pollution. Producers have expressed concerns both to us and to the MPCA Board that some of the early monitoring results appeared in the media before the affected producers were informed of the results. MPCA staff have attempted to address this concern raised by producers.

Some of these mitigation efforts have apparently worked, at least on a short time basis, to reduce hydrogen sulfide emissions. For example, one swine facility at which MPCA had measured hydrogen sulfide emissions of 389 parts per billion and 1,607 parts per billion on two separate occasions had those emissions reduced to 11 parts per billion or less following the installation of a geotextile cover on its manure storage basin with straw on top of the cover. Another swine operation with initial readings of 32 and 33 parts per billion had those emissions reduced to no more than 17 parts per billion after its storage basin was covered with straw.

42 The maximum reading obtainable from the continuous air monitor is 90 parts per billion.

Other mitigation attempts have not been as successful. The use of biological additives in manure storage pits has not helped to reduce hydrogen sulfide emissions in a number of instances. This experience with pit additives is consistent with research, which suggests that pit additives produce mixed results.[43]

Regulatory Challenges

MPCA staff are currently working to analyze the results of the agency's monitoring and compliance efforts and are attempting to formulate a policy on mitigation strategies. It is unclear at this time exactly what that policy will be. MPCA may attempt to specify some protocols that particular types of feedlots should follow and may make those protocols a requirement in certain existing or new feedlot permits. MPCA will need to decide which feedlots should take steps to mitigate odor problems. This decision could be made on a case-by-case basis depending on whether hydrogen sulfide emissions, other emissions, or odors are or may become a problem. Alternatively, it could be done based on the type of facility if that is an adequate scientific basis for predicting emissions and odors. However:

- **MPCA's air quality monitoring and compliance program for feedlots will face a number of challenges as it attempts to develop a policy on what mitigation steps various types of feedlots need to follow.**

Research is not conclusive as to which technologies work best at reducing feedlot odors and air pollution emissions.

The basic challenge that MPCA faces is that research into feedlot emissions and odor control does not yet have the answers to many of the relevant questions. For example, it is somewhat unclear how well the technologies being used will work in actual conditions on earthen basins holding millions of gallons of manure. Some of the research MPCA is using to evaluate alternative mitigation technologies is based on laboratory experiments using 200 gallon tanks, and the technologies may not fare the same under actual conditions. It is also uncertain whether technologies that work in controlling hydrogen sulfide will work to control other odorous gases such as ammonia or the more than one hundred volatile organic compounds that can be emitted by feedlots.

Other unknowns include how long particular remedies will last or whether they will pose other operational problems for livestock producers. For example, MPCA staff have cited research from the University of Minnesota suggesting that straw covers may be one of the better potential solutions to hydrogen sulfide emission problems. However, straw tends to sink, sometimes within weeks of initial application. It may be costly to acquire and then to reapply straw in order to limit emissions on a continual basis. Straw may also pose operational problems when it sinks in an earthen basin and later needs to be removed. One of the researchers at the University who conducted the laboratory experiments cited by MPCA staff has also concluded that:

> With the information collected to date, biomass covers (especially straw) probably offer a reasonable short term option for reducing

43 Jeffery Lorimor, "Odor Control Technologies and Their Costs," in *Current Technologies in Odor Control*, presented as part of the Allen D. Leman Swine Conference (September 19, 1998), 63-67.

> odors from the manure storage unit source. What is needed, however, is a thorough economic analysis of the capital investment and operating costs of various manure storage covers.... Geotextile fabrics or other inorganic floating materials may offer longer term odor and gas emissions solutions to pork producers.[44]

It is also unclear whether requiring feedlots to use particular technologies such as straw covers will address the odor and emission problems that may occur at certain times of the year. For example, basins and lagoons of various types emit odors and gases during agitation and pumping when they are emptied and the manure is then applied on land. It is unclear whether a straw cover or other device will prevent odors and emissions during agitation and pumping. Also, basins that lack a natural crust may emit odors during the "spring turnover" period until the basins return to equilibrium.

Finally, there is a need to recognize that future advances in nutrition may reduce the need for manure storage covers of any type. Researchers are looking at ways of manipulating swine diets to reduce both odors and nitrogen excretions by reducing the proteins and sulfurs in the diet and increasing synthetic amino acids, thus increasing digestibility. Existing research has demonstrated that nutritional modifications alone can reduce ammonia emissions by 28 to 79 percent.[45] However, in order for producers to adopt nutritional changes, they must be cost-effective. How much nutritional modifications can be relied on to reduce odors and emissions at swine facilities remains to be seen.

Two examples help demonstrate the importance of a number of these concerns. These two examples are the only cases, as of October 1998, in which MPCA has taken actions in the form of an administrative order or a permit condition to require a feedlot to implement a specific odor-reducing technology. In all other cases, MPCA is allowing the facility owners to select a remedy and see if it addresses the hydrogen sulfide problem, although MPCA staff may have encouraged some feedlot owners to select a particular technology.

As mentioned earlier, MPCA is currently requiring a swine facility with documented violations of the hydrogen sulfide standard to place straw, in addition to a geotextile mat, on top of two earthen basins containing liquid manure. MPCA preferred to have the feedlot use straw only without a mat, but it let the facility install the geotextile mat preferred by its owners, provided straw was added on top of the mat.

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44 Larry D. Jacobson, "The Use of Covers to Control Odors from Pig Manure Storage Units," in *Current Technologies in Odor Control*, presented as part of the Allen D. Leman Swine Conference (September 19, 1998), 28-32.

45 A. L. Sutton, "Using Nutrition to Control Odor," in *Current Technologies in Odor Control*, presented as part of the Allen D. Leman Swine Conference (September 19, 1998), 10-23.

In an administrative order to that facility, MPCA said research at the University of Minnesota shows that a geotextile fabric cover without straw or other biomass is less effective to control hydrogen sulfide emissions than a geotextile cover with straw or other biomass on top. It is unclear what research MPCA cited. Research at the University of Minnesota using 200-gallon tanks has shown that straw alone is more effective than a geotextile mat alone, but we are not aware of research that has compared the performance of straw to that of a geotextile mat with or without straw on top of it under actual field conditions. As we indicated earlier, researchers believe that a geotextile mat may be a better long-term solution than straw alone. MPCA could have but did not permit the facility to install the mat without the straw to see if the mat alone would solve its hydrogen sulfide emission problem. Furthermore, we are not aware of any other case where a mat alone was used to attempt to reduce hydrogen sulfide emissions. As a result, there is neither research nor actual experience that can provide any guidance on: 1) whether the mat alone would have been sufficient to address the problem, 2) what benefits in terms of reduced odors and emissions adding the straw on top of the mat would produce, and 3) what the additional costs of straw would be on a long-term basis.

In our discussions with MPCA staff, they justified requiring the straw on top of the mat by saying that, because of this facility's long-standing odor and emission problems, they were looking for the "best" possible solution and not just any solution that would have enabled the facility to meet the emissions standard. Staff admitted, however, that it was possible that a geotextile cover alone might have been sufficient to meet the standard and would have been less costly for the feedlot owners. Although an argument could be made that this situation required the best possible solution, we do not think that this case should set an example for all future cases. It makes more sense for MPCA to have emission standards and then give facilities the flexibility to choose remedies that enable them to meet the standards. Regulators need to be sensitive to cost and operational considerations. The benefits and costs of the best possible solution need to be considered relative to other solutions that meet emission standards.

MPCA needs to consider the cost-effectiveness of various strategies to reduce odor and air pollution from feedlots.

A second case involves a dairy that had a potential emission problem as measured by a Jerome meter last spring. In the dairy's feedlot permit, MPCA required the dairy to cover its earthen basin with at least eight inches of straw throughout the entire year. It is questionable whether maintaining a straw cover is necessary year-round, since the dairy's basin apparently has a rather thick natural crust now that the owners have made changes in the bedding materials used in the dairy. The bedding materials, when mixed in with the manure, have helped produce a natural crust on the manure basin.

This example illustrates the need for MPCA to be careful not to order excessively costly remedies if less costly remedies are available. In late September 1998, MPCA was preparing to send the dairy a notice of violation for not maintaining an eight inch straw cover on the entire basin. This action would not have made sense since the basin had a thick cover limiting its emissions and subsequent Jerome meter readings did not indicate a potential exceedance of the hydrogen sulfide standard. Furthermore, keeping the straw requirement in the dairy's permit does not make sense to us. The manure storage basin now has a thick crust which may be a better alternative than the straw.

In addition, the example indicates that MPCA needs to make sure that it prescribes remedies that address the source of odors and emissions. Some of the odors and emissions from feedlots are caused when earthen basins or concrete pits are agitated and pumped. Also, annual turnover of basins that lack a natural crust tends to occur in the spring, and additional odors can be emitted until these basins return to equilibrium. In such instances, it may be possible to mitigate the odors in a less costly manner than requiring a year-round cover on the basin or pit. The straw cover requirement in this dairy's permit may not prevent excessive odors and emissions during either spring turnover or agitation and pumping.

Other Policy Issues

Much of our discussion on air quality has been about MPCA's hydrogen sulfide monitoring and compliance program. We have focused primarily on MPCA's efforts to measure hydrogen sulfide emissions and obtain compliance with agency emission standards. There are two related policy issues regarding air quality that should also be mentioned.

First, there is the issue of cumulative impacts. MPCA has conducted research that suggests that feedlots or industrial or municipal facilities located within several miles of another may have cumulative impacts on hydrogen sulfide and ammonia concentrations in the air under certain meteorological conditions. This conclusion is based on an air dispersion model applied to a certain geographic area in west central Minnesota. The conclusion raises questions about whether the approach that has been taken with MPCA's hydrogen sulfide program will be able to adequately address concerns about hydrogen sulfide emissions. Individually, feedlots may be in compliance with MPCA hydrogen sulfide standards, but collectively they may emit enough hydrogen sulfide to exceed the maximum concentration allowable under certain weather conditions if they are close enough to one another. To some extent, this issue may be addressed through environmental review of large feedlots and through permitting requirements placed on feedlots located in areas with high concentrations of feedlots. However, MPCA should first test the results of the model by attempting to measure actual emissions in areas with high concentrations of feedlots.

Questions remain about the health effects of feedlot air emissions and the cumulative impact of nearby feedlots.

Second, some have questioned why MPCA standards for hydrogen sulfide differ from those used by the federal government for workers at livestock facilities. Federal government standards allow significantly greater exposure to hydrogen sulfide emissions within a livestock facility than MPCA allows at the facility's property line. The Minnesota Department of Health (MDH) has also developed "health risk values" (HRVs) for hydrogen sulfide and ammonia. The HRVs are different from MPCA hydrogen sulfide standards but are much more consistent with MPCA standards than federal standards. As a result, the 1998 Legislature directed the Minnesota Department of Labor and Industry—in consultation with MPCA and the departments of Health and Agriculture—to report by January 15, 1999 on whether there is a need for changes to hydrogen sulfide standards within livestock facilities of 500 animal units or more and at distances up to 5,000 feet from animal waste storage facilities.[46] There clearly is a difference in how these

46 Minn. Laws (1998), ch. 401, sec. 55.

various standards have been developed. The federal standards are based more on the potential impacts on healthy workers, while the MPCA standards and MDH health risk values are geared toward impacts on the least healthy individuals. Because of the current study underway, we have not attempted to evaluate whether the hydrogen sulfide standards used by MPCA are appropriate. However, the issue of appropriate standards is a legitimate one that deserves attention.

COUNTY PROGRAMS

MPCA's feedlot program depends on delegated counties to issue feedlot permits, oversee feedlot operations, and minimize environmental pollution from feedlots. Ideally, a good county feedlot program should have an inventory of feedlots in the county, know which feedlots pose environmental problems, and have a plan to address the pollution problems. County officials should also thoroughly review new and expanded feedlot permit applications and ensure that proposed new or expanded feedlots are constructed in accordance with MPCA rules and guidelines, local zoning ordinances, and sound engineering practices.

We surveyed feedlot officers from 47 "delegated" counties.

In order to understand county feedlot programs, we sent a survey to all 47 delegated counties and received responses from all of them. We also reviewed county feedlot ordinances and county feedlot officer reports submitted annually to MPCA. Finally, we visited eight delegated and two non-delegated counties and interviewed county feedlot officers and staff about their feedlot programs.[47] Overall, we found considerable variation in the resources that delegated counties devote to feedlot regulation and the thoroughness with which they review feedlot permit applications. We also found that while MPCA has taken a few recent steps to oversee county feedlot operations, it has not developed clear standards of what it expects from county programs. MPCA has not provided sufficient oversight to allow it to either require significant changes in a county's program or, if warranted, terminate a county's participation in the feedlot program.

Resources

In our county feedlot survey, we asked counties to provide us with their 1998 feedlot budget and the number of full-time equivalent (FTE) staff that work on feedlot issues. We found that:

- **Counties vary considerably in the amount of resources they devote to feedlot regulation.**

According to our county feedlot officer survey, the median 1998 feedlot budget in delegated counties was $26,800, but budgets ranged from $3,540 to $125,000.[48]

47 The delegated counties were Blue Earth, Fillmore, Lac Qui Parle, Martin, Mower, Rice, Rock, and Stearns counties. The non-delegated counties were Redwood and Renville counties.

48 Forty-one counties responded to this question.

Thirty-five counties supplemented state funding with county general funds and 14 counties said their budget included funds generated from permit fees.[49] On the other hand, ten counties said their entire feedlot budget came from state feedlot funds.[50]

Several counties reported to us that their entire feedlot regulation budget came from state funds.

The median number of FTE staff devoted to feedlot regulation in 1998 was .85, but the number ranged from 0 to 3.0 FTE. Sixteen counties reported that less than 0.5 FTE staff worked on feedlot regulation. Some of this variation is expected due to differences in the number of feedlots. However, there is considerable variation among counties that have similar numbers of feedlots. In two of the counties we visited, Fillmore and Lac Qui Parle, the feedlot officer was the county's chief environmental and zoning officer. The feedlot responsibility was tacked on to their existing responsibilities and they did not have enough time to do a thorough job of evaluating all permit applications and responding to feedlot complaints. On the other hand, Blue Earth and Rock counties each had three staff working on feedlot issues. Stearns County accepted a delegation agreement in 1998 and has hired three staff to work on feedlots, with plans to hire a fourth person in 1999.

Some of the county feedlot officers we visited commented on the inadequate resources devoted to feedlot programs in nearby counties. One county feedlot officer made the following comment on the survey:

> The program assistance and dollars available to the counties for adopting the county feedlot program is being stolen from the state. Any county in the southern half of Minnesota not applying, at a minimum, a 0.5 FTE [effort] is not doing justice to this program. Many of these programs have been add-ons to existing overburdened employees and [the state feedlot grant] is used to fund counties' general revenue accounts.

Feedlot Inventories

There are three levels of feedlot inventories.[51] A Level 1 inventory indicates all sites where livestock are present, and whether animals are confined to barns or on open lots. A Level 2 inventory identifies sites where a potential for pollution exists. It includes the number and types of animals at each site, the distance from surface water and wells, and whether there is an open lot or underground manure

49 In all, 29 counties said they have fees of one type or another: 16 counties said they have one-time feedlot permit processing fees, 16 counties have fees for processing conditional use permits, 10 counties have building or land use permit fees for farm buildings, 3 counties have annual fees based on feedlot size, and 2 counties issue renewable permits or licenses that require a fee at each renewal. Fees are generally under $200, but a few counties have higher fees for large feedlots. One county charges $25 for a required manure management plan prepared by the county's manure resource coordinator. Two counties without fees said they are planning to develop a fee schedule.

50 Although counties are required to match state funding, the match can take the form of in kind contributions such as staff time charged to other county budgets.

51 The levels were designated by a consortium of state agencies, including MPCA. See Board of Water and Soil Resources, *Feedlot Inventory Guidebook* (St. Paul, 1991).

Feedlot inventories are important in identifying feedlots with pollution problems.

storage pit. A Level 3 inventory is the most comprehensive. It identifies sites where an actual pollution hazard exists. It contains detailed information on the distance of the feedlot from lakes, streams, wetlands, drainage ditches, tile inlets, wells, sinkholes, and other environmentally sensitive areas; a map or sketch of the site including the direction of runoff; whether there are any runoff control measures; a description of each above and below ground manure storage facility and how the manure is transported to the facility; the number of acres available for manure spreading; a description of how the manure is applied; and other relevant items.

MPCA has encouraged counties to conduct feedlot inventories, both through the funding formula for base grants and its awarding of challenge grants. In our survey of county feedlot officers, we asked about their completed feedlot inventories and inventories they were working on. We found that:

- **Counties varied considerably on the level of feedlot inventory they had completed.**

We estimate that about 51 of the state's 87 counties have completed or are working on a feedlot inventory. Based on our survey of county feedlot officers and other information we received from MPCA, we estimate that 13 counties have completed or are working on a Level 3 inventory, 28 have completed or are working on a Level 2 inventory, and 10 counties have completed or are working on a Level 1 inventory. We estimate that statewide, about 36 counties (including 6 delegated counties) do not have a feedlot inventory completed or in progress.

Of the counties we visited, Blue Earth and Martin counties reported that they have Level 3 inventories. Blue Earth County feedlot staff told us they had identified and visited all of the feedlots in the county, a process that took about one and a half years. At each site, they made sure that state and county permit requirements were met and that the feedlots were in compliance with state rules. They identified 478 active feedlots in Blue Earth County. Currently about 45 of them are not in compliance with state rules or county ordinances and county staff are working to bring them into compliance.

Martin County staff told us that they drove every road and matched what they found with existing permit records. They also scored each site on a five point environmental risk scale. They identified 671 sites, including about 35 sites for which they had no prior records. The county is contacting those sites and requiring them to either submit a permit application or inform the county that they are no longer raising animals. About 70 sites had problems requiring immediate attention. County staff are working with those feedlots to bring them into compliance.

Lac Qui Parle County, on the other hand, has a Level 1 inventory. The county has a list of all the feedlots in the county and the number and types of animals, but it has not looked at potential pollution issues such as how far the feedlot is from a waterway or drainage ditch.

Permitting

We asked county feedlot officers about the progress they were making towards identifying and issuing certificates of compliance to the feedlots in their counties that required one. Thirty-seven of the 47 delegated counties knew or were able to estimate the percentage of feedlots requiring a certificate of compliance or interim permit that had one. The estimates varied greatly, ranging from 2 percent in Wabasha County to 100 percent in Mahnomen and Sibley counties. Eight counties reported that less than one-fourth of the feedlots in their county that required a certificate of compliance had one, and 11 counties reported that over three-fourths of the feedlots in their county that required a certificate of compliance had one. The median response was 50 percent.

We asked county feedlot officers whether they inspected new feedlots and feedlot expansions before, during, or after construction; whether they inspected closed or abandoned feedlots; and whether they conducted routine inspections of existing feedlots. We found that:

- **There are wide differences among counties in the extent to which they visit proposed new feedlots and feedlot expansions. Most counties visit all proposed feedlots before construction of new facilities begins, but only one-third of the counties visit all feedlots during or after construction.**

Most counties visit new feedlot sites prior to construction, but not during or after construction.

As shown in Table 2.2, 29 counties (71 percent) said they inspected all proposed new feedlots or feedlot expansions prior to construction. Four counties (10 percent) inspected fewer than one-fourth of the feedlot sites prior to construction. In contrast, only 13 counties (33 percent) said they visited all of the sites during construction and after construction was complete. Thirteen counties (33 percent) visited fewer than one-fourth of the sites after construction was complete.

In our interviews with county feedlot staff in eight counties with delegated feedlot programs, we found considerable variation in permit review practices. Some counties, such as Blue Earth and Rock counties, had identified all of the feedlots with pollution issues and were making an effort to work with the owners to bring the feedlots into compliance with state rules. Rock County officials said that county staff inspect all sites under 1,000 animal units, including those with a potential for pollution. Although state rules call for forwarding permit applications with 300-1,000 animal units to MPCA if there is a potential pollution hazard, the county prefers to work with the producer to eliminate the pollution hazard so that the county can issue a certificate of compliance, rather than having MPCA issue an interim permit.

On the other hand, the feedlot officers from Fillmore and Lac Qui Parle counties told us that feedlots were one of many responsibilities they had and they did not have time to visit all of the proposed feedlots. The Lac Qui Parle environmental officer recently had feedlots added to his responsibilities. He said the county plans to contract with a university extension employee to do about ten site visits per year.

Table 2.2: Feedlot Inspections by Delegated Counties

Percent of Feedlots Inspected	Number of Counties	Percent
Prior to Construction		
0-24%	4	10%
25-49%	1	2
50-74%	3	7
75-99%	4	10
100%	29	71
	41	100%
During Construction		
0-24%	11	28%
25-49%	3	8
50-74%	6	15
75-99%	7	18
100%	13	33
	40	100%
After Construction is Complete		
0-24%	13	33%
25-49%	4	10
50-74%	3	8
75-99%	7	18
100%	13	33
	40	100%
Closed or Abandoned Feedlots		
0-24%	29	76%
25-49%	3	8
50-74%	0	0
75-99%	3	8
100%	3	8
	38	100%
Routine Inspections of Existing Feedlots		
Not Done	27	63%
Less Than Once Every Three Years	7	16
Once Every Three Years	5	12
Once Every Two Years	3	7
Once Per Year	1	2
	43	100%

NOTE: Depending on the question, between four and nine counties did not respond or said they did not know.

SOURCE: Legislative Auditor survey of 47 delegated county feedlot officers.

The Fillmore County feedlot officer told us that he discusses MPCA's manure storage facility construction guidelines and manure application guidelines with permit applicants when they submit their feedlot permit applications. Although the county feedlot ordinance requires that manure storage facilities be constructed in accordance with MPCA guidelines, the feedlot officer does not have time to

inspect all facilities to ensure that they are in compliance. He said that one contractor does much of the construction work in the county. That contractor does good work, so the feedlot officer uses his time to visit other sites. He also told us that he routinely issues interim permits for sites that are potential pollution hazards and that he does not revisit the sites to see if the producer implements adequate pollution controls. The county is working with MPCA's Rochester regional office on a pilot self-audit program for about 50 feedlots in one sub-watershed area. The county gave feedlot owners a set of questions to answer about their feedlots. Based on the responses, the county hopes to identify the sites that are potential pollution hazards and work with the feedlot owner, the soil and water conservation district, and MPCA to assist those farmers with improvements. The goal is to get all of those feedlots permitted and in compliance by spring 1999.

We also found that:

- **Few counties do routine inspections of existing feedlots to ensure that they are operating in accordance with permit requirements and feedlot rules, and few counties visit abandoned feedlots to ensure that they were closed properly.**

Most counties do not routinely inspect existing feedlots.

According to Table 2.2, most of the county feedlot officers (63 percent) said they did not routinely inspect existing feedlots. Among those who responded that they regularly inspected feedlots, we learned from our visits to counties that some of them planned to do routine visits but had not yet begun. For example, Blue Earth County feedlot staff told us that they issued three-year county feedlot permits in addition to MPCA certificates of compliance. They hope to visit each site when the county permit is renewed, but right now they are concentrating on dealing with the environmental issues and issuing permits to those feedlots that still need them. Stearns County accepted a delegation agreement in 1998. The staff hopes to do routine inspections in the future, perhaps on a selective basis on sites with potential problems (such as sites near shoreland), but for now they are concentrating on getting their program up and running.

Table 2.2 also shows that 29 delegated county feedlot officers (76 percent) said that they visit fewer than one-fourth of the closed or abandoned feedlots in their counties and only 3 feedlot officers (8 percent) said they visited all of the closed feedlots. Twelve counties (26 percent) reported that they had a mechanism to ensure that feedlots are properly closed. However, when asked to elaborate, five counties answered that proper closure is required by the county ordinance and three counties said it was required in conditional use permits. Two counties said their ordinances require feedlot owners to file an abandonment plan. None of these counties indicated how they enforced the requirement.

Finally, we asked counties if they knew or could estimate the number of days it took them to issue a permit. Eight counties said they "calculated" that it took them an average of 28 days to issue a permit from the time an application was complete. In addition, 27 counties said they did not calculate this but they "estimated" that it took them 18 days to issue permits. Eleven counties said they did not know, and one county did not answer the question.

County and Township Feedlot Ordinances

Most counties have adopted feedlot ordinances to supplement state rules.

Most counties and a few townships have adopted their own feedlot ordinances or feedlot components of zoning ordinances to supplement state feedlot rules. According to a 1997 survey of 81 counties conducted by the Minnesota Association of County Planning and Zoning Administrators, 63 counties (78 percent) had county-wide zoning enforcement. Over half of the county zoning ordinances were adopted in the 1990s. In addition, 31 of the counties reported that a total of 170 townships enforced some type of land use management. Forty-seven counties (58 percent) said that feedlot management was a part of their zoning ordinance.[52]

The 1998 Legislature required all counties and townships to submit copies of their feedlot ordinances to the Minnesota Department of Agriculture by August 1, 1998.[53] As of October 1998, the department had contacted all counties and had received 55 county ordinances dealing with animals. Seven of these were shoreland management ordinances that restricted or prohibited feedlots in shoreland areas. In addition, three counties had draft ordinances and two counties had interim feedlot ordinances. Twenty-seven counties had no feedlot ordinances, although some of them were beginning the process of drafting one. The department also received feedlot ordinances from 24 townships, but it did not attempt to contact all townships.

Our survey of delegated county feedlot officers included questions about local feedlot ordinances and county feedlot requirements. In addition, we reviewed about 20 county feedlot ordinances from both delegated and non-delegated counties. We found that:

- **County feedlot ordinances vary considerably, with many counties having requirements that are more explicit than MPCA rules.**[54]

Thirty-six of the 47 counties (77 percent) said they require conditional use (zoning) permits for some feedlots, but the conditions under which feedlots require a conditional use permit vary. The most common types of feedlots requiring conditional use permits are large feedlots (but the definition of large ranges from 100 to 2,000 animal units), feedlots with an earthen basin or lagoon for storing manure, and feedlots within prescribed distances from shoreland, municipalities, or residences. Counties that require conditional use permits also require notification of neighbors and a public hearing as part of the permitting process.[55] Thirteen counties (28 percent) have a limit on the size of new or

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52 David Weirens, *1997 Annual Survey for the Minnesota Association of County Planning and Zoning Administrators* (St. Paul, 1997), 2-3.

53 *Minn. Laws* (1998), ch. 401, sec. 57.

54 The 1998 Legislature specifically sanctioned the county practice of adopting animal feedlot standards that are more stringent than MPCA's. See *Minn. Laws* (1988), ch. 401, sec. 41 and *Minn. Stat.* §116.07, subd. 7(k).

55 The 1998 Legislature required all non-delegated counties to hold a public meeting before issuing a feedlot permit for 300 or more animal units. The law takes effect January 1, 2001. See *Minn. Laws* (1998), ch. 401, sec. 41.

expanded feedlots. The limit ranges from 1,500 to 5,000 animal units, with a median limit of 2,000 animal units.

Current state rules contain few restrictions on feedlot location.[56] The rules do not require minimum setbacks from residences, municipalities, parks, or public buildings. MPCA staff told us that they view these setbacks as local zoning issues best dealt with by local government, rather than as environmental risks within the agency's domain. Twenty-nine of the counties we surveyed (62 percent) reported that they have minimum setback requirements for new feedlots from residences, ranging from 500 feet to five-eighths of a mile. The median setback requirement is a quarter mile. Our review of county ordinances indicated that they sometimes require greater setbacks for larger feedlots than smaller feedlots. In addition, some counties require greater setbacks from municipalities, residential zones (usually defined as ten or more residences in close proximity), parks, places of worship, schools, roads, and cemeteries. Some of the feedlot ordinances prohibit construction of new feedlots within a 100-year floodplain, in a shoreland area, or near a drainage ditch, well, wetland, steep slope, or sinkhole.

A majority of counties we surveyed have "setback" requirements for feedlots from residences.

MPCA's existing rules have few requirements for manure storage and application, but MPCA has published guidelines for construction of concrete manure storage pits and manure application. Some of the county ordinances we reviewed have specific requirements that are more explicit or more restrictive than MPCA's guidelines. For example, some of the ordinances require new manure storage facilities to be designed and inspected by an engineer and some require a minimum storage capacity for concrete pits ranging from six months to one year. Many counties have mandatory manure application setback requirements from shoreland, wetlands, ditches, wells, tile intakes, and residences. Distances are normally greater for spray irrigation and spreading without incorporation than for injection or immediate incorporation of manure. Some counties do not permit any spray irrigation or any application of manure without injection or immediate incorporation. Some of the county ordinances have different application setback requirements depending on the season of the year, the soil type, and the slope.

Some county ordinances also have definitions of animal units that are different from the definition in MPCA rules. For example, one county considers each young hen, or pullet, to be only 0.002 animal units, while MPCA rules define all chickens including pullets to be 0.01 animal units. The county also considers each young turkey, or pullet, to be only 0.005 animal units, while MPCA rules define all turkeys to be 0.018 animal units. Several other counties consider turkeys under 10 pounds to be 0.01 animal units each. County use of a different definition of animal units is acceptable for certain regulatory purposes but is not appropriate when the regulation involves a state rule. We are aware of at least one county that determined that an environmental assessment worksheet was not necessary based on its definition of animal units although the EAW would have been mandatory under MPCA's definition. In this case, MPCA's definition of

56 Minn. Rules, 7020.0300, subp. 20(A) defines feedlots located in a 100-year floodplain or shoreland, feedlots in an area draining to a sinkhole or to shallow soils overlaying a fractured or cavernous rock, and feedlots within 1,000 feet of a well to be potential pollution hazards. *Minn. Rules,* 7020.0300, subp. 21 defines shoreland as land within 1,000 feet of the normal high water mark of a lake or 300 feet of a river or stream.

animal units should have been used since the Environmental Quality Board's rules on environmental review require the use of MPCA's definition.[57] MPCA's definition should also be used when determining whether MPCA or a county should issue a feedlot permit, since this determination is made in accordance with MPCA rules. In the future, this may become more important as additional requirements in MPCA rules may depend on the number of animal units at a feedlot.

We also reviewed several township ordinances. Like county ordinances, some townships require conditional use permits for feedlots over a certain size, setbacks from residences and municipalities, prohibitions or restrictions on earthen basins, and manure application setbacks and restrictions. Some townships passed one-year moratoriums on construction of new feedlots or expansions of existing feedlots over a given size (ranging from 200 to 400 animal units).

MPCA Oversight of County Feedlot Programs

Adequate technical support and proper oversight are essential to ensuring that counties fulfill their responsibilities in the feedlot program. County staff are located closer to regulated facilities, and better suited to respond to problems and investigate complaints. On the other hand, county staff may be influenced by local politics, sometimes making permitting and enforcement more difficult. MPCA should be available to assist counties when problems arise. The agency should also check up on counties to ensure that they are doing an adequate job.

MPCA's oversight of county programs is weak.

We discussed MPCA's oversight of county feedlot programs with MPCA central office and regional staff and with county feedlot officers in the counties we visited. We also asked about MPCA's oversight of the county feedlot program on our survey of delegated county feedlot officers. In general, we found that:

- **Historically, MPCA has provided little oversight of county feedlot programs, but it has recently made efforts to require delegated counties to meet some minimal requirements as a condition of remaining in the feedlot program.**

In our survey of delegated county feedlot officers, we asked how often MPCA staff visited the county to review the feedlot program. Seventeen of the 47 counties (36 percent) that responded to our survey said that MPCA visited one or more times per year. Ten counties (21 percent) said MPCA staff visited them less than once per year and 12 counties (26 percent) said MPCA staff never visited. Eight counties (17 percent) did not know or did not answer the question.

MPCA staff told us that historically they have provided little oversight of the county feedlot programs after they accepted a delegation agreement. MPCA staff reviewed the 1997 annual county feedlot officer reports and checked to see whether feedlot officers attended regional training sessions and how many site visits they made to feedlots. They sent letters to six counties whose reports indicated little feedlot activity, reminded them of the requirements of the program,

57 *Minn. Rules*, 4410.0200, subp. 3.

and asked them to submit their plans for 1998. To date, however, MPCA has not terminated any feedlot delegation agreements.[58]

We interviewed the feedlot officer from Lac Qui Parle County, one of the counties that received a letter from MPCA. He told us that he had other responsibilities and was unable to meet MPCA's demand that he conduct site visits at 10 percent of the county's feedlots. He said he told MPCA the county might have to drop out of the program. The county and MPCA reached an agreement whereby the county would use the services of a University of Minnesota Extension Service worker to inspect a total of about ten feedlots in 1998.

MPCA's current rules on the responsibilities of delegated counties are vague.

MPCA staff acknowledge that, other than permitting, the feedlot rules are not very specific about county responsibilities and they hope the revised rules will spell out in greater detail what counties are supposed to do. MPCA has visited counties to check on their progress in dealing with particular feedlots with potential pollution problems and getting them permitted. Also, MPCA regional staff spend much of their time assisting county feedlot staff with permit inspections and complaint investigation. But MPCA staff acknowledge that unless a county requests assistance, MPCA does little to check on the thoroughness of county site inspections and does not verify the information that counties submit on their county feedlot officer reports.

We also think that MPCA could do a better job keeping track of how counties use state feedlot funds. For example, despite the requirement that counties match state funds, several counties reported to us that their entire feedlot budget comes from state funding. While the law allows the county to match state funds with in kind contributions, several counties reported that very little staff time is devoted to feedlot regulation. MPCA needs a better accounting of counties' use of state funds to ensure that the money is being used for feedlot regulation and not other county purposes.

County Concerns About the Feedlot Program

Overall, county feedlot officers had favorable opinions about feedlot regulation in Minnesota. For example, 73 percent of feedlot officers agreed or strongly agreed with the statement "county and state feedlot regulations are effective in protecting the environment in my county from pollution." In addition, 90 percent of respondents disagreed or strongly disagreed with the statement "county and state feedlot regulations are too restrictive and do not allow livestock producers in my county to earn a reasonable profit."

On the other hand, several county feedlot officers had concerns about feedlot regulation in general, and about MPCA's administration of the program in particular. For example:

- **Several county feedlot officers expressed concerns about the amount of resources devoted to feedlot regulation.**

58 This includes Itasca County, which did not accept state funds and did not submit a county feedlot officer's report in 1997.

This concern took several forms. Some counties expressed particular concerns about MPCA's timeliness in permit review and its efforts in enforcement, but others commented more generally that MPCA does not devote enough staff to feedlot regulation to do an adequate job. According to one respondent, "the number of new feedlots and old problems far exceed the agency's staff on hand to deal with this steamrolling problem." Several respondents commented on the inaccessibility of central office staff, and others suggested that MPCA should assign more staff to its regional offices.

Some county feedlot officers expressed concern about the amount of funding available to counties, as illustrated by the following comment:

> If the state is going to get serious about regulating feedlots, then they need to get serious about funding to counties. It has to come down from the state level because many county officials are extremely hesitant to get involved in this highly political arena. Therefore, they refuse to budget for it. If the money doesn't come, [the job] won't get done in most counties unless MPCA staff do everything. However, since they also don't receive funding and staffing, that won't happen either.

The county feedlot officer from one of the non-delegated counties we visited said that his county did not accept a delegation agreement because the amount of state funding was not adequate to compensate for the time and effort that would be involved in issuing feedlot permits. He also said that county officials feared losing control of their program if the state became involved. This county was able to do a thorough job of feedlot regulation by actively enforcing the conditional use permit requirements of its feedlot ordinance and calling on MPCA to investigate and take enforcement action for serious pollution violations.

Some county feedlot officers told us that owners of small feedlots cannot afford to make their feedlots environmentally safe.

Some county feedlot officers felt that many farmers cannot afford to make the improvements needed for their feedlots to be environmentally safe. One feedlot officer commented that, "smaller feedlots, particularly 50-100 cow dairies, are difficult to deal with. They do not have money to solve problems and properly manage wastes." A few respondents questioned whether all of the requirements MPCA staff were demanding in permits were necessary. For example, one feedlot officer commented that, "the requirement for engineer designed and approved manure storage has really put a hardship financially on the small family farmer trying to improve existing conditions." Another feedlot officer noted that the cost of eliminating the threat of pollution entirely might be prohibitive but that there are often less costly alternatives that would reduce some of the pollution threat. According to this respondent, "the bottom line is that if we could reduce runoff by 50 percent on all feedlots with lower-cost practices that producers are amenable to, we would be far ahead of where we are now. Currently, producers are resistant because of the high cost of 100 percent abatement."

We also found that:

- **County staff had some concerns about the amount and quality of the training they received from MPCA.**

Eleven feedlot officers listed more or better training to county staff as an area where MPCA could improve the feedlot program. A few respondents also commented on the need for training of engineers and building contractors, manure applicators, and producers. We also asked county feedlot officers a specific question about the adequacy of training they received from MPCA. Of 44 feedlot officers who responded, 13 (30 percent) said the training they received was "good" or "very good," 22 (50 percent) said it was "fair," and 9 (20 percent) said it was "poor" or "very poor."

In our visits to delegated counties, county staff indicated a desire for more hands-on training. They appreciated when someone from an MPCA regional office accompanied them on feedlot inspections. One county feedlot officer told us that he attended training conducted by the concrete industry in order to obtain sufficient knowledge to review construction of concrete manure storage pits.

MPCA feedlot supervisors told us that the agency has an annual two-day training session each winter that it expects county feedlot officers to attend. Each year it covers a different topic. In addition, MPCA regional staff have been holding quarterly meetings with county feedlot officers in the southern part of the state to address issues of concern to counties. MPCA staff also told us that they encourage county staff to get training in concrete standards from the American Concrete Institute and to get manure application training from the University of Minnesota Extension Service. MPCA had hoped that regional staff would be able to provide more hands on training to county feedlot staff, but the heavy volume of complaints and enforcement cases has taken up much of their time.

FEEDLOT RULES

One of the key reasons why there have been problems with animal feedlot regulation is that:

- **MPCA's administrative rules for feedlots are outdated.**

MPCA has not revised its feedlot rules since 1978.

MPCA rules for animal feedlots have not been revised since 1978. The livestock industry and regulatory strategies have changed significantly over the last two decades and knowledge about the effect of feedlot pollution has grown, but the industry and the regulators are still operating under rules developed a long time ago.

There are numerous problems with the existing rules. They do not address land application of manure, manure stockpiling, manure storage structures, and the proper closure of feedlots. In addition, the rules do not adequately spell out the responsibilities of counties in the delegated county program. The existing rules do not establish the responsibilities of consultant engineers working for feedlot

owners in inspecting construction to make certain that work is done according to design specifications and MPCA permit requirements.

Current feedlot rules are inadequate.

The current rules do not directly address feedlot siting issues such as whether new construction or expansion should be allowed in environmentally sensitive locations such as shoreland, floodplains, high probability areas for sinkholes, or areas close to water sources for municipalities or individuals. The rules also do not address other issues such as allowing livestock in lakes and rivers, transporting manure, preventing or mitigating odors, and clearly defining pasture land. Furthermore, the existing rules require the use of certificates of compliance even though there are questions about the legal enforceability of provisions placed in certificates. Ironically, without adequate rules, many of the current regulatory restrictions placed on feedlots appear in certificates of compliance where their enforceability may be in doubt.

Because of the problems with existing rules, MPCA staff has had to develop guidelines and policies for dealing with a number of these and other issues. In addition, the staff have had to spend a significant amount of time on these issues in individual permits. This has resulted in significant expenditures of staff time on individual permits, particularly larger and more controversial permits, than would have been the case if rules adequately addressed important regulatory issues. It has also meant that MPCA has often had to respond on an ad hoc basis to citizen concerns about the proposed site and plans for a particular feedlot without having rules in place to address issues raised by citizens. Having adequate rules in place would help to reduce the amount of time spent on individual permits because policy issues would be less of a problem. It might help to focus MPCA's attention on tasks not receiving enough attention such as the inspection of proposed feedlot sites and of construction activities.

MPCA began working on new feedlot rules in 1995.

As a result of these and similar concerns, MPCA began working on new feedlot rules in early 1995. The agency's first notice of solicitation of public comments regarding possible new rules was published in June 1995. Since then, MPCA has formally solicited public comments three additional times. MPCA staff have also worked with the Feedlot and Manure Management Advisory Committee (FMMAC) and with county feedlot officers to obtain input on new rules. Drafts of new rules or portions of the rules have been reviewed by the FMMAC on at least eight different occasions. In addition, drafts have been shared with county feedlot officers at a number of regional meetings.

There has been concern that MPCA has taken far too long to develop new rules. As a result, the 1998 Legislature set a deadline of June 1, 1999 for MPCA to adopt new rules. The legislation also required that MPCA submit its updated rules by March 1, 1999 to the legislative committees with jurisdiction over agricultural and environmental issues.[59] However:

- **It is unlikely that MPCA will meet the legislative deadline for completing the rulemaking process.**

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59 *Minn. Laws* (1998), ch. 401, sec. 53.

As of mid-January 1999, MPCA staff had still not finished drafting rule changes. MPCA may be able to complete the rule drafting process and share the rules it intends to take to public hearing with legislative committees by March 1, 1999. However, the draft it shares with the Legislature may differ from the final version it adopts after public hearings. Furthermore, it will not be possible for MPCA to adopt rule changes before June 1, 1999.

It will have taken MPCA about four years from the time it began to consider new rules to the time that the agency formally proposes new rules. And, it will probably take most of the rest of 1999 to complete the rulemaking process. In total, assuming no unanticipated delays, the rulemaking process will have taken about five years to complete. This is well in excess of the average time it takes state agencies to draft and adopt rules when outside opinion is sought and a hearing is required. In a 1993 study, we found that it took state agencies an average of 27 months to complete the rulemaking process under those circumstances.[60]

We think that the length of the rulemaking process in this instance is the result of several factors. First, MPCA has used an extensive process of formulating internal committees to develop rules and consulting outside groups such as FMMAC and the county feedlot officers. Second, until recently, MPCA did not assign a senior staff person to work on drafting the rules and lead the rulemaking process. Instead, a less experienced staff person was responsible for guiding the drafting process. Finally, MPCA's staff resources for feedlot regulation have not been adequate and this has affected the adequacy and timeliness of the agency's feedlot work in a number of areas including rulemaking.

The current draft of proposed rule changes appears to address many of the problems with existing rules.

Despite the length of time it has taken to draft new rules, the current draft of rule changes appears to address many of the problems with existing rules. However, our conclusions about MPCA's draft rules should be considered tentative since we are only dealing with a draft at this point. We do not know exactly what rules MPCA will propose and take to hearings.

The latest draft of rule changes contained provisions dealing with a number of problems including land application of manure, manure stockpiling, manure storage, feedlot closure, delegated county responsibilities, mandatory construction reports by consultant engineers, and siting of feedlot facilities in sensitive areas. In addition, the draft rules eliminated both interim permits and certificates of compliance and replaced them with one feedlot permit to be obtained prior to construction. The draft also included a proposal for streamlining the permitting process by issuing "short form" permits to certain feedlots. Feedlot owners eligible for a "short form" permit may be able to obtain a permit without the level of review typically conducted by MPCA.

The draft rules would also require certain existing feedlots to obtain new permits by specified dates. For example, existing feedlots with 1,000 or more animal units would have to apply for an NPDES permit by October 1, 1999. Existing feedlots with 300 or more animal units and which discharge pollutants into navigable waters through a man-made device or into waters of the United States would have

60 Office of the Legislative Auditor, *Administrative Rulemaking* (St. Paul, 1993), 33.

to apply for an NPDES permit by October 1, 1999. In addition, feedlots with 300 to 999 animal units would have to apply for a Minnesota feedlot permit by June 1, 2000 if the facility did not have an existing certificate of compliance or pre-1980 permit or if the certificate or permit does not include all current feedlot and manure storage facilities. Feedlots with 50 to 299 animal units would need to apply for a new permit by June 1, 2002 if the same conditions apply to them. Some feedlots with 50 to 299 animal units would have to apply earlier; those using a lagoon or earthen basin for manure storage but lacking an existing certificate or pre-1980 permit that includes all existing structures and facilities would have to apply for a new permit by June 1, 2000. All other feedlots with 50 to 999 animal units—namely those that have and are in compliance with an existing certificate or pre-1980 permit—would have their certificates or permits automatically converted to a new Minnesota feedlot permit on the dates the rules become effective but the new permits would subsequently expire on June 1, 2004. All conditions in existing certificates and permits would become enforceable conditions in the new permits.

We see some potential shortcomings in the draft rules. For example, they do not address how the agency will be able to enforce requirements for environmentally safe closure of feedlots when the individual or business owning a feedlot is bankrupt. MPCA is currently studying this problem but does not plan to hold up the rulemaking process to resolve it. In addition, we are concerned that the requirements for certain feedlots under 1,000 animal units to apply for a new permit in either the year 2000 or 2002, as well as the setting of a five-year term on some permits, may create a large workload for MPCA. There is a legitimate rationale for these requirements, but we question whether MPCA's resources are adequate to handle the number of applications the agency may receive.

MPCA needs to minimize the environmental risks involved in streamlining the permitting process.

We also question whether it is a good idea to eliminate interim permits. Eliminating interim permits would reduce some paperwork requirements, but it may lessen the importance for both MPCA and feedlot owners to ensure that construction occurs in accordance with MPCA rules and permit conditions. If the feedlot owner has already received the final feedlot permit prior to the construction of new or expanded facilities, there may be less pressure on MPCA to inspect construction and make sure that the owner's consulting engineer provides required test information and the certification that construction has proceeded in accordance with design specifications and MPCA rules and conditions. There may also be less reason for the owner and engineer to provide the required information since they already have the permit in hand. Since we have found that MPCA already needs to improve on its followup after construction and its presence in the field during construction, we wonder whether taking some of the pressure off of MPCA is a good idea.

Although MPCA's intent is valid, we are also concerned about MPCA's possible proposal for "short form" permits. MPCA would like to free up resources for other feedlot regulatory functions by streamlining the permitting process for feedlots that are less likely to pose environmental problems. However, it remains to be seen if MPCA will be able to design the "short form" permit process so that environmental risks are minimized. A mid-January draft of the rules had not addressed all of the potential environmental concerns with "short form" permits. For example, the draft would have allowed facilities in karst areas to expand up to

as much as a total of 999 animal units without MPCA review of the potential for sinkhole problems.

MPCA RESOURCES

Some of MPCA's shortcomings in feedlot regulation can be traced to a lack of adequate resources. As recently as 1990, MPCA had only two staff working on feedlot regulation. Now, it has 24 full-time staff positions assigned to feedlot regulation and additional staff working on air quality monitoring and environmental review activities involving feedlots.[61] The increase in resources has not been sufficient to enable the agency to perform its regulatory functions in a timely and thorough manner. Dramatic growth in the number of large feedlots and the resulting increase in citizen concerns about their environmental impact have caused the public's expectations for government regulation to soar. MPCA is deluged with phone calls not only from citizens concerned about feedlot pollution but also from producers upset about delays in processing permits and completing environmental reviews.

Obtaining adequate resources for feedlot regulation has been a problem for MPCA.

We think that there are two fundamental resource problems adversely affecting MPCA's performance:

- **MPCA has not had enough staff working on feedlot regulation, and**
- **Too few of MPCA's feedlot staff are located outside of St. Paul.**

We have shown throughout this chapter that MPCA has not been able to perform its regulatory functions in a timely and thorough manner. The agency has been unable to keep up with its workload in permitting, enforcement, and environmental review. In addition, MPCA has not been sufficiently thorough in its review of permits and lacks an adequate presence in the field for the purpose of reviewing proposed feedlot sites, inspecting construction work, and overseeing existing feedlots. Furthermore, the agency needs to provide much better oversight of counties in the feedlot program. Finally, MPCA has not done a good job of tracking its own performance in responding to complaints or processing permits in a timely way. It is understandable that, lacking adequate resources, MPCA has allocated few resources to providing good management information.

Some may question the conclusion that MPCA has inadequate resources to regulate feedlots. Many states have fewer resources devoted to feedlot regulation. A 1997 report by the Kansas Legislative Post Auditor showed that, among nine states surveyed, Minnesota had the second highest number of feedlot regulatory staff. Only North Carolina with 23 staff had more than Minnesota (19) at the time of the survey. However, it appears that Minnesota has a larger workload than other states. As Table 2.3 shows, Minnesota has close to 20,000 facilities with state-issued permits, while other states have between zero and 4,000 state permitted facilities. Clearly, Minnesota has also chosen to issue permits to more

61 Four of the 24 positions are currently vacant.

Table 2.3: Feedlot Staffing and Permits in Minnesota and Other States, 1997

State	Full-Time Equivalent Staff	State and Federal Permits Issued	Permits per Staff Person
Colorado	0.5	0	0
Iowa	9.0	615	68
Kansas	9.5	2,518	265
Minnesota	19.0	19,550	1,029
Missouri	10.0	3,180	318
Nebraska	4.5	1,599	355
North Carolina	23.0	4,000	174
Oklahoma	9.0	663	74
Wisconsin[a]	6.5	60	9

[a]Wisconsin has 30 additional staff in the priority watershed program.

SOURCE: Kansas Legislative Division of Post Audit, *Reviewing the Department of Health and Environment's Efforts to Protect Water from Pollution Caused by Confined Livestock Feeding Operations* (Topeka, January 1997), 40-41.

Minnesota's ratio of permits to staff is higher than in other states.

facilities than have other states. Minnesota's larger number of staff is insufficient to accomplish that task. While Kansas has 265 permitted feedlots for each staff person and North Carolina has 174 permitted feedlots per staff person, Minnesota's ratio was greater than 1,000 at the time of the Kansas survey. Even with the additional appropriation made by the 1998 Legislature, there are still more than 800 permitted feedlots per staff person in Minnesota.[62]

Minnesota could choose to regulate fewer feedlots like other states. The main difference between Minnesota and a number of other states is that other states are less likely to require permits for small feedlots. This option might make sense if small feedlots had fewer pollution problems than large feedlots. However, available evidence suggests that this is not necessarily the case. Due to the larger volume of manure involved, large feedlots may pose greater environmental risks if manure storage structures are not constructed or managed properly or in the event of a catastrophe. But small feedlots currently have more potential water pollution problems due to their locations. Small feedlots are more likely to be open lot or partial confinement facilities with manure runoff into streams and lakes.

The second resource problem for MPCA is the centralization of its feedlot regulatory staff. Only about 25 percent of existing staff are located outside of St. Paul. In contrast, about 80 percent of the feedlot regulatory staff in Kansas are located in district offices throughout the state. MPCA's centralization makes it difficult for the agency to visit the sites of proposed new feedlots or feedlot expansions, inspect construction work, periodically visit existing facilities, and carry out its complaint handling and enforcement responsibilities. MPCA has five

62 Kansas Legislative Division of Post Audit, 40-41.

to six feedlot staff located in regional offices around the state, but these resources are spread too thin. Furthermore, the regional staff cannot be effectively managed from St. Paul. There is little feedlot engineering expertise in the regional offices and, as a result, regional staff have not been empowered to make decisions about permits and enforcement actions. Attempting to manage these staff from St. Paul has been a cumbersome and inefficient arrangement.

Too many of MPCA's feedlot staff are located in St. Paul.

SUMMARY

In this chapter, we have highlighted a number of problems with existing feedlot regulation by MPCA and counties. At the state level, there are problems with MPCA's timeliness in permitting, enforcement, and environmental review activities. In addition, we have concerns about the thoroughness with which MPCA reviews some permit applications and with MPCA's minimal presence outside of St. Paul. Problems also exist in some counties that assist MPCA in regulating feedlots. A number of counties appear to do an excellent job, but others do not have adequate resources assigned to feedlot regulation. The lack of updated feedlot rules has been a problem, but MPCA appears to be addressing this concern.

In Chapter 3, we examine the options for addressing the problems we identified with existing regulatory efforts. We discuss the need for additional regulatory resources as well as the need to set priorities for improving feedlot regulation. Clearly, feedlot regulation should strive for more efficient and timely service as well as more effective protection of the environment.

Discussion

CHAPTER 3

In Chapter 2, we examined the efforts of MPCA and delegated counties and identified a number of problems with existing regulatory activities. In this chapter, we make recommendations to address those problems and consider how the Legislature can help state and county officials improve the regulatory system. In particular, we address the following questions:

- **What improvements are needed in the regulatory efforts of MPCA and delegated counties?**

- **What options should state policy makers consider in helping state and county regulators improve current regulatory practices?**

RECOMMENDATIONS

There are five general areas in which feedlot regulation needs improvement. They are: 1) permitting, 2) environmental review, 3) complaint handling and enforcement, 4) ongoing oversight of feedlots, and 5) MPCA oversight of delegated counties. We present recommendations below on each of these subjects. We recognize that regulators may not be able to implement all of these recommendations without additional resources. The need for additional resources is discussed in the next section along with other policy alternatives.

Permitting

MPCA has not paid adequate attention to visiting feedlot sites prior to permit approval and during construction.

MPCA has a group of engineers who are responsible for approving feedlot permits issued by the agency. These engineers handle a large number of permits and are unable to visit many of the feedlot sites either prior to permit approval or at various stages of construction. A limited number of staff in MPCA regional offices are available to assist the engineers by conducting some feedlot inspections. However, this staffing arrangement is difficult to manage and does not provide sufficient engineering expertise at feedlot locations outside of the Twin Cities metropolitan area.

As a result of the current staffing arrangement, MPCA has paid more attention to policy issues that can be dealt with in St. Paul and inadequate attention to visiting feedlot sites prior to permit approval, as well as during and after feedlot construction. MPCA has paid significant attention to the design standards for

manure storage structures but not enough to whether construction is occurring as designed. The agency has attempted to address this concern by requiring consulting engineers working for feedlot owners to report to MPCA on construction work. However, this reporting requirement is not always followed, and MPCA needs a larger presence in the field to ensure that engineers and contractors are following the agency-approved design and permit requirements. Counties with the resources to do such inspections have told us that their presence at construction sites helps ensure that good construction work is done. That assurance provides a benefit not only to the public, which is interested in protecting the environment, but also to the feedlot owner, who is interested in receiving good value for the price paid for the construction work. We recommend that:

- **MPCA should conduct more site visits of feedlots during and after construction work, particularly when that construction is in an environmentally sensitive area or involves contractors or engineers that MPCA is unfamiliar with or has had problems with on previous feedlot projects.**

MPCA also reviews most permit applications and other documents in St. Paul without visiting feedlot sites prior to permit approval. While such a procedure can work for some permits, it is usually preferable to visit the site of a proposed new feedlot or expanded feedlot prior to permit approval to make sure that the environmental risks of the site have been accurately presented by the permit applicant. Visiting all sites is not feasible with current MPCA resources and would probably not be cost-effective to do. However, MPCA needs to do a better job of visiting those sites where the potential for significant environmental concerns is present. For example, MPCA needs trained staff to visit sites in the karst regions of the state, since maps of sinkholes can quickly become outdated and cannot be relied on to provide a complete summary of all the environmental risks. We recommend that:

- **MPCA should conduct more site visits prior to issuing feedlot permits, particularly for feedlots in environmentally sensitive areas.**

MPCA's permit review is not always thorough and complete.

MPCA also needs to make sure that the permit review process is thorough and complete. We found instances in which MPCA granted permits without receiving important documents, such as an engineer's certification that work was completed in accordance with the approved design specifications, a permeability test estimating the seepage rate of an earthen manure storage basin, or notifications to MPCA of when construction work would occur. We also found numerous instances where required karst reviews were not in permit files. We recommend that:

- **MPCA should strive to provide a thorough review of all permit applications and ensure that required documents are filed with the agency in a timely way.**

MPCA recently implemented a construction report review checklist that will help remind staff of the need to follow up on construction requirements. This checklist will not, however, ensure that staff actually follow up on these requirements. For

example, an existing checklist listing karst reviews was not sufficient to ensure that the reviews were completed or, if completed, placed in the permit file.

MPCA does not adequately track interim permits, and many of them have expired.

We also found that MPCA does not have a system for tracking interim permits. As a result, the agency has several file cabinets full of interim permits, many of which have expired. Follow-up on interim permits is desirable to ensure that permit recipients have constructed, expanded, or modified their feedlots in accordance with the requirements of their interim permits—some of which were issued because of known pollution hazards. We recommend that:

- **MPCA should notify feedlot owners with expired interim permits and take appropriate actions.**

The action will clearly depend on the circumstances of each case. In some cases where a project has been delayed and an existing pollution hazard is not present, the appropriate action may be to issue a new interim permit. In other cases where construction has occurred, MPCA staff should inspect the facility and determine if a certificate of compliance should be issued or if enforcement action is appropriate.

- **MPCA also needs to develop a tracking system to make sure that feedlot owners follow through on permit requirements.**

The nature of this system will depend on whether MPCA continues to issue interim permits in the future. MPCA is currently considering the elimination of interim permits as contemplated in a draft of its proposed rules. The elimination of interim permits in the future will not, however, diminish the need to follow up on feedlot permit recipients to ensure that they have completed construction in accordance with design specifications and MPCA requirements. In fact, the tracking system will probably be more important since feedlot owners will already have their permit in hand and will not need to convert the permit to a certificate of compliance.

We also observed that current permit applications do not require applicants to provide sufficient information on manure management practices. MPCA's proposed rules may address some of these concerns. However, we think that once new rules are adopted MPCA should modify the permit application to reflect the fact that the rules will not allow manure application within a particular number of feet of certain features such as lakes, streams, or tile inlets. The permit application should indicate that the applicant should not count land within these setbacks as land that is available for manure application.

MPCA has had a backlog of permit applications.

Finally, we found that MPCA has difficulty reviewing permit applications in a timely manner. Backlogs of one to two months between receipt of a completed application and the beginning of an engineering review are typical and can be larger at times. A draft of MPCA's new rules acknowledges this problem by advising permit applicants to submit applications 145 days before they hope to begin the construction of a new feedlot or 180 days before their current permit expires if they are applying to expand an existing feedlot or renew an existing permit. We recommend that:

- **MPCA should strive to reduce its permitting backlog and reduce the amount of time producers wait for their applications to be reviewed.**

MPCA has information on permit applications in one database and information on permits issued in another database. When permits are issued, information is transferred from the first database to the second. However, MPCA routinely deletes information useful in tracking permit issuance time when it makes this transfer. Retaining the information could be useful in tracking the agency's performance. Accordingly, we also recommend that:

- **MPCA should track the timeliness of its performance in issuing permit applications.**

Environmental Review

Due to a growing workload in 1998, MPCA has been unable to complete EAWs in a timely manner.

In general, we found that MPCA has improved the manner in which it has handled its environmental review responsibilities. The improvement has come largely in the last year as the agency has learned more about potential air quality issues and has been able to focus attention on potential hydrogen sulfide and ammonia emissions rather than generalized concerns about odor. MPCA has, however, had difficulty keeping pace with a growing workload and was not able to complete environmental assessment worksheets in a timely manner during 1998. In typical years, the agency has had about two full-time equivalent staff working on environmental reviews of feedlots. Because of the increased workload in 1998, MPCA temporarily assigned two additional staff to help reduce the backlog of environmental assessment worksheets (EAWs).

We are concerned that the Environmental Quality Board has proposed a rule change that may increase the number of EAWs done by MPCA. EQB's proposed rule change would eliminate the application of the connected action rule to feedlots but would require a mandatory EAW for new total confinement feedlots or feedlot expansions of 1,000 or more animal units. This is a substantial change from the current cutoff point of 2,000 animal units for a total confinement facility.

We understand the reasons why EQB and its staff developed this proposed rule change and are generally supportive of the environmental review process. However, we think that a higher priority should be placed on other problems in the feedlot regulation program. For example, we would place a higher priority on increasing the number of site visits MPCA makes prior to permit approval and during and after construction. Strengthening MPCA's ability to enforce state laws and rules should also be given higher priority than increasing the number of EAWs. As a result, we recommend that:

- **The Legislature should review the need for, and the potential cost of, the Environmental Quality Board's proposed rule on the environmental review of feedlots.**

The 1998 Legislature required EQB to submit its proposed rule and a summary of public comments received to specific legislative committees and divisions by March 1, 1999 and prohibited EQB from adopting the new rule for 60 days after the items are submitted. This requirement provides the Legislature with an

opportunity to review the proposed rule and provide input and direction to the EQB.

Complaint Handling and Enforcement

MPCA needs to document its response to complaints about potential water pollution.

MPCA has a mixed record with respect to complaint handling. MPCA staff have done a good job of documenting the receipt of odor complaints, the subsequent measurement of hydrogen sulfide emissions, and the actions by producers to mitigate odor problems. In contrast, MPCA staff do not record many of the complaints they receive about potential water pollution problems and do not adequately document the resolution of the complaints they do record in the feedlot complaint log. As a result, we were unable to reach any conclusions about whether MPCA adequately addresses complaints regarding water pollution from feedlots. We think the consistent use of a complaint log is useful both for internal management purposes as well as for demonstrating the magnitude of the agency's workload and achievements to policy makers and the public. Consequently, we recommend that:

- **MPCA should require staff to record all complaints received about feedlots and briefly document how each complaint is resolved.**

We also found problems with MPCA's enforcement activities dealing with water quality. Although the agency has recently taken several significant enforcement actions, its general track record has not been good. MPCA has taken a long time to complete some enforcement actions, and staff have not been able to keep up with their enforcement caseload. MPCA needs to process enforcement cases involving potential water pollution more quickly. Long delays diminish the deterrent value of enforcement, may threaten water quality, and give the appearance that the agency is not serious about enforcement. In addition, the agency has been inconsistent in its enforcement efforts across the state. At least one regional office has not pursued potential enforcement cases involving feedlots. We recommend that:

Long delays with some enforcement cases have been a problem at MPCA.

- **MPCA should require regular status reports from investigators to ensure that progress is being made on water quality enforcement cases.**

- **MPCA should have more staff resources assigned to water quality enforcement activities in order to reduce the backlog and speed up the resolution of cases.**

- **MPCA should ensure that regional offices are consistent in their willingness to investigate potential water quality violations.**

Because MPCA's hydrogen sulfide monitoring program is relatively new, the program has less of a track record in enforcement to examine. The program, which began in 1997, has focused mainly on monitoring hydrogen sulfide emissions at feedlots with odor complaints and encouraging feedlot owners to try various methods to reduce the hydrogen sulfide emissions and odor problems. MPCA has directed only two feedlots to take specific actions to reduce emissions.

The agency is now attempting to develop a policy that would spell out what mitigation steps various types of feedlots should follow. We believe that MPCA will face a number of challenges in developing such a policy due in part to the limited knowledge available from existing research. We encourage MPCA to make sure that the mitigation steps it orders are appropriate and will address the source of emissions and odors. We also encourage MPCA to be careful not to order excessively costly remedies. The agency needs to consider the benefits and costs of the various solutions that meet emission standards.

Ongoing Oversight of Feedlots

There is no statewide inventory of feedlots, and many counties have not conducted inventories.

In addition to complaint handling and enforcement, there are other elements of ongoing oversight that merit attention. There is no statewide inventory of feedlots, and only about 13 counties have completed or are working on a Level 3 inventory that will enable regulators to know which feedlots have a water pollution problem. Statewide, there about 36 counties that have not conducted and are not working on any type of inventory, including 6 delegated counties. Some form of inventory or sampling will be done as part of the Generic Environment Impact Statement (GEIS) on Animal Agriculture, but the details of this aspect of the GEIS will probably not be decided until early 1999. If the Environmental Quality Board chooses to sample feedlots rather than inventory them, the costs can be less and the sampling may still produce useful information on the general types of feedlot with pollution problems. However, information from counties with Level 3 inventories already suggests that most existing water pollution problems are on small feedlots. County feedlot officers responding to our survey also confirmed that they believe small feedlots are currently more often the source of water pollution problems than large feedlots. It is unclear at this time what additional information a sampling of feedlots would provide, although it may provide a broader confirmation of those findings or more detailed information on the nature of water pollution problems statewide. Sampling could also be used to examine issues not usually looked at during an inventory such as manure management practices.

In the long run, it would be better for regulatory purposes to have Level 3 inventories in as many counties as possible. These inventories enable regulators to focus their oversight and enforcement activities on specific feedlots with problems. However, the need for inventories has to be balanced with the ability of regulators to use those inventories. Funding extensive inventories may only make sense when either the counties or MPCA have the staffing resources to use the inventories in their regulatory programs. The lack of sufficient technical assistance for farmers needing to correct problems identified during an inventory can also diminish the usefulness of an inventory. We recommend that:

- **The Legislature should carefully weigh the need for additional county inventories for regulatory purposes along with the budget request it will receive for the Generic Environmental Impact Statement on Animal Agriculture.**

Even with a good inventory and adequate regulatory support, it can be difficult to get owners of small existing feedlots to correct water pollution hazards at their facilities. Owners of small feedlots may lack adequate resources and may not be able to borrow money at a reasonable interest rate. Formulating a policy to address this problem is difficult. It would be most efficient from the standpoint of the taxpayer if regulators were able to identify those feedlots that need assistance in order to correct water pollution hazards and are not likely to make those corrections without assistance. The policy would also be effective only to the extent that these feedlots remain in business. If a feedlot is likely to close for financial reasons, investing either public or private money in correcting pollution hazards that result from the operation of the facility does not make sense. Targeting these feedlots is very difficult.

MPCA needs to develop a better strategy to get owners of small feedlots to correct water pollution hazards.

An alternative approach in some cases might be for MPCA to accept a less than perfect, but more cost-effective, solution to water pollution abatement when dealing with small existing feedlots, particularly those under 300 animal units.[1] For example, getting the owner of a small open lot or partial confinement facility with limited resources to make changes that take care of 80 percent of the pollution problems at 20 percent of the cost of the ideal solution may be more cost effective than other alternatives. Achieving some reduction in open lot runoff may also be a more realistic solution given the number of these feedlots, the limited public funds available statewide for cleanup, and the risk that such feedlots may not stay in business. We recommend that:

- **The Legislature, MPCA, and other policy makers should consider alternative ways of reducing water pollution emanating from small feedlots, including the need for additional public funds as well as more cost-effective ways of achieving a reduction in water pollution.**

A related concern involves the proper closure of feedlots. Proper closure is needed to prevent potential pollution to either surface or ground water. MPCA currently does not have any rule or permit requirement regarding feedlot closure and lacks a mechanism for ensuring that feedlots are properly closed. MPCA is considering rule changes that would spell out the responsibility of a feedlot owner in the event that the owner closes a feedlot. In addition, as a result of a legislative directive, the agency is studying the need and funding for an animal waste liability account that could be used for closure as well as general containment and cleanup. This report was not available at the time we conducted our research but should be available by January 15, 1999.

MPCA and most counties do not inspect existing feedlots enough.

A final concern about ongoing oversight is the relative absence of periodic inspections of existing feedlots. MPCA does not currently have the resources to conduct such inspections except in response to complaints, and most delegated counties do not conduct such inspections either. Thus, other than following up on complaints, MPCA and most counties do not have a mechanism for ensuring that feedlots are operating in accordance with their permits. For example, there is little

1 Such an approach works best with small existing feedlots, since owners of those feedlots are more likely to be unable to afford expensive pollution upgrades. In addition, according to MPCA staff, federal rules may restrict the use of such an approach with feedlots of 300 to 999 animal units and prohibit its use with feedlots of 1,000 or more animal units.

or no oversight of the application of manure to land. MPCA has required many feedlots to maintain records of manure application but rarely reviews those records. Along with the need for additional resources in other aspects of feedlot regulation, policy makers should consider the need for resources to conduct periodic feedlot inspections.

MPCA Oversight of Counties

MPCA's oversight of county feedlot programs has been weak.

Delegated counties vary considerably in the amount of resources they devote to feedlot regulation. Some counties have very good programs, while others are not devoting sufficient resources to do more than process permits. Appropriations bills have required counties to match the state appropriations they receive with a combination of cash and in-kind contributions. Some counties provide local funding far in excess of the required amount—sometimes two to four times the state appropriations received. However, other counties do not appear to be providing local resources to match the state contribution.

MPCA has provided little oversight of county feedlot programs, thus allowing some counties to continue in the program using minimal resources and providing a minimal regulatory effort. We recommend that:

- **MPCA should provide more effective oversight of county feedlot programs. The agency should ensure that counties are meeting the financial requirements set forth in law and should establish expectations and standards for county feedlot programs.**

MPCA recognizes the need for better oversight and has developed language in its draft of new rules that will help establish expectations for counties in the program. However, the agency needs to go further than just set forth some general expectations. MPCA needs to make sure that counties are meeting the state's match requirement and are doing an adequate job in permitting and other functions. MPCA needs to work closely with counties and be somewhat patient while attempting to improve the fiscal effort and regulatory performance of counties. However, MPCA also needs to be willing to terminate a county from the feedlot program if the agency's efforts fail and the county is unwilling to meet state standards.

By the same token, we think that:

- **MPCA should encourage, and the Legislature should support, the participation of additional counties in the feedlot program.**

With technical assistance and proper oversight, counties can provide a valuable regulatory service. County staff will always be located closer to the regulated facilities than MPCA staff and thus be able to more efficiently visit the sites of proposed feedlots, check on construction, and follow up on complaints. Increasing the number of counties in the feedlot program will help to reduce MPCA's permitting workload, particularly the permitting of small feedlots, and enable the agency to improve its performance in a number of areas. Adding more counties will also leverage county funds for regulatory purposes and thus make it

less costly to the state to improve feedlot regulation than appropriating funds to MPCA and relying on MPCA staff to carry out the improvements.

We also recommend that:

- **MPCA should attempt to ensure that county feedlot officers receive adequate training.**

A number of delegated counties responding to our survey cited training as one area in which MPCA could improve county feedlot programs. Only 30 percent of the counties said training provided by MPCA was "good" or "very good." Some counties indicated that they could use better training in the technical aspects of the job. Others wanted more on-the-job training, such as having an MPCA engineer accompany them on feedlot inspections to help them gain better first-hand knowledge of what they should focus on during inspections. In order for MPCA to rely on counties to appropriately issue permits and perform other regulatory functions, the agency needs to make sure that county staff have adequate training.

IMPLEMENTATION OPTIONS

In general, we think that:

- **MPCA should make every possible effort to implement the recommendations in this report by using existing resources.**

MPCA has four vacant positions in the feedlot program that should be used to increase the program's staffing outside the Twin Cities area. These positions should be used to increase the number of feedlot site visits done prior to permit approval and during and after construction. The positions should also be used to improve MPCA's responsiveness to complaints and its timeliness in enforcement activities.

MPCA needs to move more of its feedlot staff outside the Twin Cities.

In addition, MPCA should consider moving some of its existing feedlot staff out to regional offices or other decentralized locations. Such a move could further enhance the agency's ability to visit feedlot sites and work with both feedlot owners and citizens concerned about feedlot pollution. The main disadvantage of MPCA attempting to move existing staff out of the Twin Cities metropolitan area is that the agency may, by forcing the issue, lose some of its experienced staff who are not interested in moving. There may also be logistical problems and costs involved with finding office space to house staff elsewhere.

We think that MPCA should be expected to make some other improvements with existing resources. For example, MPCA should be expected to do a more thorough job in reviewing permit applications and should be able to develop a system for tracking interim permits or, if the agency eliminates interim permits, a system for tracking the requirements that design engineers and feedlot owners are expected to meet during and after construction. MPCA should also be able to implement better systems for enforcement case management and complaint handling. We also think that MPCA should be able to provide a basic level of

county program oversight. Without additional resources, that oversight may be limited at first to a review of whether counties are meeting state aid matching requirements. Finally, MPCA should be expected to develop cost-effective strategies for addressing water pollution problems with small feedlots, as well as policies for addressing hydrogen sulfide and other air emission problems at feedlots.

However, we think that:

- **MPCA and counties would probably need additional resources to address certain problems in feedlot regulation.**

Without additional resources, MPCA is unlikely to be able to conduct periodic inspections of operating feedlots or to monitor whether feedlots have been properly closed. We also think that progress in identifying and addressing long-standing pollution problems with small feedlots in non-delegated counties will be slow. MPCA may be able to develop strategies to help delegated counties make progress, but the MPCA feedlot program does not have the resources to run what would amount to 35 to 40 county programs in the non-delegated counties.

Increased county participation in the feedlot program and effective MPCA oversight of counties are needed to improve feedlot regulation.

A better way of addressing these concerns would be for MPCA to encourage more counties to participate in the feedlot program, have clear expectations about their responsibilities, and provide greater technical support to and oversight of county programs. Pursuing that approach, however, will require additional funding for an increase in the number of participating counties. It would also require more funding for detailed inventories, technical assistance to feedlot owners, and possibly financial assistance to feedlot owners if policy makers want to speed up progress in identifying and addressing pollution programs. Some progress can be made using existing levels of resources such as the competitive grant portion of state aid for delegated counties, but that progress is likely to be slow. Additional funds for MPCA oversight of county programs would also be desirable.

One difficulty with this approach is that counties vary considerably in the degree to which they are interested in providing resources for feedlot regulation. Some counties currently participating in the feedlot program may not even be meeting state aid matching requirements. Greater financial oversight of county programs by MPCA can help to some extent, but this problem may not have an easy solution. Placing greater expectations on county programs is needed, but it may be difficult to translate these expectations into better performance if county boards are reluctant to spend more than required by law and could cause some counties to leave the program. Targeting state aid to counties with minimal programs would also be unfair to counties that have used significant local funds to establish comprehensive regulatory programs. Increasing the state grant per feedlot would help counties with minimal programs but could also supplant local resources currently devoted to feedlot regulation in other counties. Despite these concerns, we think that encouraging greater county participation, increasing expectations for county programs, and providing more oversight will generally help to improve feedlot regulation while leveraging state funds with local dollars.

Without additional resources, MPCA may also have difficulty in reducing the time it takes to get permits approved or EAWs completed. If the four vacant positions

were used to improve permit turnaround time, they would likely be assigned to the St. Paul office. Using the positions in St. Paul, however, would only make it more difficult for MPCA to move staff to more decentralized locations in the future. The agency clearly needs to decentralize its feedlot regulation program, and its overall agency reorganization has served to highlight that need. However:

- **For several reasons, it is unclear how much additional resources MPCA may need to improve its feedlot program.**

First, it is difficult to estimate how market forces may affect the agency's workload in the future. Low hog prices, if they continue, could dramatically reduce the number of permit applications for new or expanded swine feedlots, while this year's increase in milk prices could result in more applications for dairy feedlots. Whether these price trends will continue and for how long is difficult to gauge.

Second, MPCA and EQB are considering rule changes that could significantly affect MPCA's workload. MPCA's draft of proposed rules requires certain existing feedlots to obtain new permits and requires some permits to be renewed periodically. EQB is proposing a rule change that may increase MPCA's environmental review workload. In addition, MPCA will need to meet legislative deadlines for issuing NPDES permits to existing feedlots with 1,000 or more animal units.

Third, because these changes would likely add to its workload, MPCA is considering ways of streamlining the permitting process through the use of "short form permits" for certain feedlots. Short form permits would allow a feedlot to obtain a permit by certifying that it meets MPCA standards. The permitting process would be streamlined because MPCA would not review every permit application like it currently does. The use of short form permits could free up resources and allow the agency to conduct annual compliance inspections of a small percentage of existing feedlots as well as more inspections of proposed feedlot sites and construction work on new or expanding feedlots that are not eligible for a short form permit. It is not possible at this time to analyze how well this alternative permitting approach would work, since MPCA's proposal is not yet complete. MPCA will need to design the system so that it minimizes the additional environmental risks involved in not reviewing certain permit applications while maximizing the benefits of freeing up resources for regulatory efforts that are a higher priority.

MPCA needs to provide better information to policymakers on its need for more resources.

Finally, as we discussed in Chapter 2, it is difficult to quantify the need for more staff in MPCA's feedlot program because the agency does not have data on the average amount of staff time needed to perform certain tasks such as permit review. Internally, MPCA staff have estimated that the feedlot program, including related functions such as environmental review and air quality monitoring, needs more than twice the current number of staff to adequately perform its duties. We are skeptical of such estimates because they have not been based on estimates of workload and the number of hours needed to complete major tasks.

MPCA and other agencies have been discussing a feedlot budget initiative with the Feedlot and Manure Management Advisory Committee (FMMAC). The latest

proposal, presented at the December 1998 FMMAC meeting, would provide MPCA with funding for roughly 15 or 16 new positions. We recommend that:

- **If MPCA presents a request for additional feedlot staff to the Legislature, MPCA should provide the Legislature with more information on its estimated workload and the average amount of staff time it takes to complete major tasks.**

While it may be difficult to make workload estimates and estimates of task completion time, MPCA needs to be held more accountable for the resources used in the feedlot program. The program has grown considerably during the 1990s. Further budget increases should be justified based on a comparison of the amount of staff resources needed to complete various tasks to the amount of staff resources currently available.

Other options should be considered before appropriating more funds to MPCA.

We also recommend that:

- **Before appropriating any additional funds to increase MPCA feedlot staffing, the Legislature should consider whether funds from other MPCA activities could be permanently reallocated to feedlot regulation.**

We have heard anecdotes suggesting that feedlot staff are overworked while some other MPCA staff are underutilized. It may make sense to reallocate resources from other MPCA activities to feedlot regulation if those resources can be legally used for feedlot regulation and feedlot regulation is seen as a higher priority than current uses of those resources. We encourage MPCA and the Legislature to consider reallocating funds to feedlot regulation.

Another alternative to increased state General Fund appropriations for feedlot regulation is fee revenue. It could be argued that the livestock industry should pay more of the costs of regulation. Currently, the general taxpayer is financing most of the cost of state feedlot regulation. However, MPCA estimates that permit fee revenue from feedlots will increase from about $31,000 in fiscal year 1999 to $198,000 in 2000 and $376,000 in 2001 as more feedlots are required to obtain NPDES permits. The agency also estimates that certain new fees could raise additional revenue. For example, MPCA estimates that a $3 per animal unit fee on all new construction and expansion would generate about $762,000 per year. A $1 per animal unit fee for any facility using a “short form permit” approach MPCA is considering might raise an additional $170,000 annually. Including revenue from all of these sources, MPCA would have enough funds to hire about 19 to 20 additional staff in the year 2001.

The disadvantage of a fee-based approach is its potential effect on the livestock industry. Perhaps more than other regulated industries, the livestock industry operates in very competitive markets in which producers cannot raise their prices to reflect the costs of regulation if competitors in other states are not similarly regulated. In addition, the current low prices for hogs make it difficult to justify imposing fees on a segment of the livestock industry that is struggling to remain in business.

SUMMARY

There are numerous improvements needed in feedlot regulation at the state and county levels. Some of these improvements can be addressed within existing resources, but others would require additional resources. We recommend that MPCA should encourage, and the Legislature should support, the participation of more counties in the feedlot regulation program. Greater oversight of county programs by MPCA is also needed.

In considering the need for additional resources for feedlot regulation, the Legislature should examine whether existing resources for other MPCA activities should be reallocated to feedlot regulation. In addition, MPCA should provide the Legislature with more detailed information on its estimated workload in feedlot regulation and the ability of existing resources to meet that workload in future years.

Minnesota Pollution Control Agency

January 20, 1999

Mr. James Nobles
Legislative Auditor
Office of the Legislative Auditor
State of Minnesota

Dear Mr. Nobles:

The Minnesota Pollution Control Agency is pleased to receive the recommendations of the Legislative Auditor's Office for improving the state's program for regulating the environmental aspects of animal feedlots. MPCA staff have thoroughly reviewed and provided input for the report. We wish to acknowledge the careful, comprehensive and balanced job the Legislative Auditor's Office did with this audit and thank the Auditor for the opportunity to respond. Herewith we provide our comments to the feedlot program audit report.

The public profile of feedlots has increased enormously over the past decade as the animal agriculture industry has experienced dramatic change in Minnesota. The MPCA's regulatory role in this industry has necessarily changed as well, with staff assigned to feedlots increasing from four a few years ago to 34 full-time equivalents (FTE) today.

The MPCA agrees with the report's general thrust that there is room for improvement, and welcomes this opportunity to explore ways to improve our performance. At the same time we wish to point out the excellent work of our staff in the feedlot program to date. We want to make very clear our belief that they have performed admirably in a situation where, perhaps more than with any other MPCA program, the resources available have fallen far short of matching the need. Simply put, these staff have had a nearly impossible job. That they have not always succeeded in keeping up with the mountain of work in this program is no reflection on them, but instead an indication of a major increase in workload, both in projects to be reviewed and issues to be addressed.

That said, MPCA staff and management concur with the report in that the MPCA needs a greater presence in the field and that counties must eventually have the primary role in feedlot siting and regulation. Where we differ significantly is with the approach recommended in the report. The report recommends that the traditional regulatory approach of prescriptive rules, issuing prescriptive permits, inspecting for compliance, and taking appropriate enforcement action be applied to 40,000-plus feedlots in Minnesota.

The problem we see with this approach is that addressing feedlots with traditional regulatory methods would require up to 170 FTE devoted entirely to feedlots. (This is a conservative estimate,

based in part on the experience of Blue Earth County, which runs the most successful feedlot regulatory program of all the counties delegated by the MPCA to enforce Minn. Rule Chapter 7020. The county's feedlot regulatory effort provides about one FTE per 200 to 300 feedlots, a level which seems to provide, in a county which runs its program very well, the approximate level of regulatory effort called for in this report. By comparison, the MPCA's current staffing level provides about one FTE per 1,000 to 1,200 feedlots.)

Rather than addressing each feedlot separately using traditional regulatory methods as outlined in the report -- which the current program cannot do in any meaningful way -- we propose a strategic re-evaluation of the way in which we deal with the environmental problems associated with feedlots. For most of the nearly 30 years the state has had a feedlot program, the MPCA has focused primarily on issues related to runoff from open lots and to manure storage. Traditionally it has been thought that these issues were where most of the potential environmental impact of feedlots originated, and they therefore have been where we focused most of our energy.

But new realities are changing this focus. The **air emissions and odors** associated with large feedlot facilities have become an extremely contentious issue for neighbors and nearby communities. The **surface-water impacts of runoff** from the thousands of smaller, mostly open feedlots have not proven amenable to mitigation by traditional regulatory methods, primarily because of the number of facilities with runoff problems, the cultural mores of family farming, and the cost of proper mitigation. And despite widespread efforts to educate producers about **proper nutrient management**, manure continues to be vastly undervalued as a crop nutrient; it is far too often overapplied, often in combination with chemical fertilizers, resulting in unacceptable nutrient loads to surface and ground water.

Therefore, the MPCA feels that the best use of current staffing levels -- the best environmental bang for the buck, given current capabilities -- is to pull back from our traditional, regulatory focus, and frame our efforts instead in a three-pronged approach that targets proper nutrient management (manure application to crop land), the unique problems associated with runoff from smaller open lots, and the air-quality issues associated with large facilities.

Nutrient management. Overapplication of nutrients (including manure) is arguably the greatest overall threat to water quality in the state. The MPCA proposes to address this problem by working to assure that producers understand proper agronomic rates for nutrient application and do not exceed them. The primary approach will be to encourage feedlot operators to develop manure management plans for their facilities that will force them to think in terms of proper application rates for nutrients, whether from commercial or manure sources. We intend to reserve traditional enforcement for blatant violators who continue to ignore laws and rules.

Open lots. There are thousands of feedlot operations in Minnesota that have less than 300 animal units and use mainly open lots. Many of these facilities have problems with runoff of manure into surface or ground waters ranging from mild to severe. Taken together, this represents a substantial impact to the state's water quality. In many cases the solution is the construction of runoff/run-on diversions and collection basins, and denying animals access to surface waters. Most of these producers have little or no time, money, expertise, or equipment to deal effectively with this problem. These facilities are widely valued as representative of family farming. Traditional

enforcement against them is unpopular and they are often difficult to reach with the traditional permitting process. Appropriate pollution abatement systems for these facilities cost an average of $40,000 per site, a level clearly beyond this sector's means. Many are so marginal that they could go out of business in the next decade, or stiffer regulations could force them out. For this sector, the MPCA proposes a strategy of building awareness for and facilitating low-cost solutions in the context of existing technical assistance and monetary incentives and/or assistance. Enforcement would be reserved for blatant or repeat violators.

Air emissions and odors. The high-profile controversy over air emissions and odors of feedlots is in many cases associated with manure handling and storage at newer, large, confined animal feeding operations. These facilities can produce air emissions that not only diminish quality of life for those living nearby but in some cases can actually be a human health concern. The traditional, prescriptive regulatory strategy is well suited to dealing with these facilities, but there are difficulties involved in abating these emissions and setting standards for them. The MPCA has only recently begun to monitor some of the constituent gases in these emissions (particularly hydrogen sulfide and ammonia) and consider strategies for dealing with them. Much more work remains to be done in developing an evaluation and regulatory scheme for feedlot air emissions and odors.

As an overarching guide to implementing the approach outlined above, we intend to target our efforts in watersheds where the environmental impacts of feedlots are a particular problem. That is, rather than applying this approach evenly across the state, we will focus first on those watersheds where the water resources are most impacted by feedlots. Efforts may include requiring nutrient management plans for facilities and continued enforcement for blatant cases.

To implement this 3-pronged approach, the MPCA intends, as circumstances allow, to move staff or vacant positions to our regional subdistrict offices so they will be "on the ground" closer to where the problems are. The MPCA approach outlined in this letter also will depend heavily on working more closely with the counties, who must become more involved if we are to have much hope of fixing feedlots in Minnesota. MPCA staff will act as "wholesalers" to the counties, helping them to develop capacity and ability to then "retail" feedlot fixes and regulation at the local level.

The MPCA strongly believes that this approach will provide the most environmental benefit given current realities in the farm sector. We realize it may be met with skepticism from some quarters. However, there are limits to what can be accomplished with the resources likely to be available to the MPCA in the foreseeable future. The above represents what we believe to be our best opportunity to maximize environmental protection in light of those limits.

Sincerely,

Lisa J. Thorvig

Lisa J. Thorvig
Acting Commissioner

STATE OF MINNESOTA
OFFICE OF THE LEGISLATIVE AUDITOR
JAMES R. NOBLES, LEGISLATIVE AUDITOR

January 28, 1999

Members
Legislative Audit Commission

We are pleased to see that the Minnesota Pollution Control Agency (MPCA) is thinking about ways to better utilize its existing feedlot staff. However, we are concerned that the agency's response letter misrepresents our position regarding the need for more regulatory staff.

Our report says that MPCA should make every possible effort to implement our recommendations by using existing resources. We think that the agency could make some improvements through better management. In addition, the agency could utilize four currently vacant positions to improve its ability to inspect proposed feedlot sites and construction work, as well as to improve its performance in complaint handling and enforcement activities. Furthermore, while MPCA has requested more feedlot staff for next biennium, we point out that the agency's request has not been accompanied by an adequate analysis of its existing workload and staff resources.

We agree in principle with MPCA that a streamlining of the permit system could also help free up resources to address problems that are not being adequately addressed at the present time. However, MPCA only recently drafted a proposal to streamline the permit process, and we think that the proposal needs work. The agency needs to make sure that streamlining the permit process does not result in unnecessary environmental risks.

MPCA supports our suggestion that more counties be encouraged to participate in the feedlot regulation program. Unquestionably, moving in that direction would require increased state funding for counties, although it may reduce MPCA's workload and its need for resources in the long run. MPCA can help to make sure that current resources are fully utilized by providing greater oversight of existing county resources. In particular, the agency needs to examine whether currently participating counties are making the required match to state aid they receive.

Sincerely,

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