

Manure on Frozen and Snow-covered Ground  
Report to the Governor and General Assembly

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Iowa Department of Natural Resources

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## **Background**

In 2009, the General Assembly passed legislation that limits the surface application of liquid manure from confinement feeding operations during the winter. This legislation was designed to address the surface runoff and water pollution problems that often occur when manure is surface applied on frozen or snow-covered ground.

Those water quality problems are most prevalent during late winter application. For that reason, the legislation purposely restricted surface manure application except in emergency situations. Specifically, those confinements large enough to require a manure management plan (more than 500 animal units) are prohibited from surface applying if the manure cannot be injected or incorporated, from:

Dec. 21 to April 1 on snow-covered ground, and  
Feb. 1 to April 1 if the ground is frozen.

The legislation leaves a window of opportunity for producers to surface apply manure early in the winter, or at any time the ground is not snow-covered or frozen. The limits on late winter application also encourage producers to plan for manure management, resulting in more nutrient uptake and better water quality.

The General Assembly defined what constitutes an emergency and explicitly stated that the failure to properly account for the volume to be stored is not an emergency. The law gave several examples of emergencies indicating they would be limited to infrequent events that could generally not be avoided such as a natural disaster, unusual weather conditions, or equipment or structural failure.

Producers who anticipate needing emergency land application are required to identify suitable fields in their manure management plans (MMPs) and to notify the appropriate DNR regional field office prior to application, starting Dec. 21, 2009. The law places additional restrictions on land application such as defining the types of fields where application would be allowed and protecting tile intakes.

### **Requests for Emergency Application**

A wet fall and early heavy snowfalls in 2009 resulted in poor field conditions for manure application after harvest. Despite some of the heaviest snowfalls on record, by Feb. 9, 2010, the DNR had received only 43 requests for emergency surface application on snow-covered or frozen ground from producers affected by the law.

**Table 1: Number of Requests for Emergency Application by DNR Field Office Area**

Region of State	Number of Requests
Northeast	7
North central	5
Northwest	11
Southwest	8
South central	9
Southeast	3
Total	43

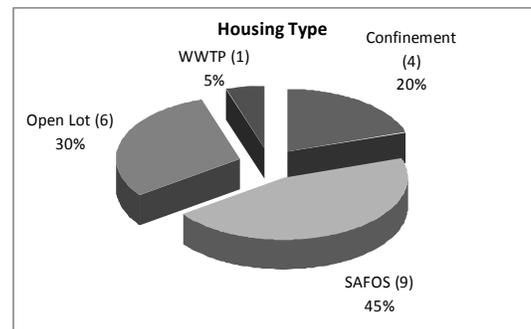
As inquiries came into field offices, DNR staff and producers discussed the options for land application, the requirements for fields eligible for emergency surface application and the risks of surface runoff and water pollution when applying during late winter to frozen or snow-covered ground. DNR staff helped producers sort through and identify the least risky areas to surface apply manure.

### Complaints

It's clear that confinements needing an MMP are not the only type of facility that poses a potential risk to surface water quality as snow melt and thawing occur. Other types of livestock and poultry facilities can also cause runoff or pollution issues. In fact, only 20 percent of the complaints reported to the DNR about manure application on snow-covered or frozen ground concern the producers regulated under this law. (See Table 2 below.)

**Table 2 with Graph: Complaints Received about Manure Application on Frozen or Snow-Covered Ground during Winter of 2009-2010 by Housing Type**

Housing Type	Number of Complaints	Percent of Complaints
Confinements (MMPs) <sup>1</sup>	4	20
Confinements (SAFOS)	9	45
Open Lot	6	30
WWTP	1	5
Total	20	100



1. Facilities regulated under H.F. 432

Also, only 65 percent of the 20 complaints received this winter are about liquid manure. In addition, only 65 percent of the complaints are about confinement facilities. Clearly from the complainants' viewpoints, the problems are caused by all types of facilities, not just by larger confinement feeding operations. (See Tables 3 and 4.)

**Table 3: Complaints Received about Manure Application on Frozen or Snow-Covered Ground during Winter of 2009-2010 by Manure Type**

Manure Type	Number	Percent
Liquid	13	65
Solid	7	35
Total	20	100

**Table 4: Complaints Received about Manure Application on Frozen or Snow-Covered Ground during Winter of 2009-2010 by Animal Type**

Animal Type	Number	Percent
Swine	8	40
Dairy	6	30
Cattle	4	20
Poultry	1	5
Biosolids <sup>2</sup>	1	5
Total	20	100

2. One complaint was from land application of municipal sludge.

As heavy snow cover melts and begins to runoff in March, the DNR expects an increase in actual manure runoff events. DNR also anticipates that many producers will begin applying manure as soon as field conditions permit. Since soils are saturated, this spring may bring a potentially high number of water quality violations, followed by an increase in complaints about surface application and water pollution. The DNR field office staff will be challenged to investigate these potential runoff events and complaints.

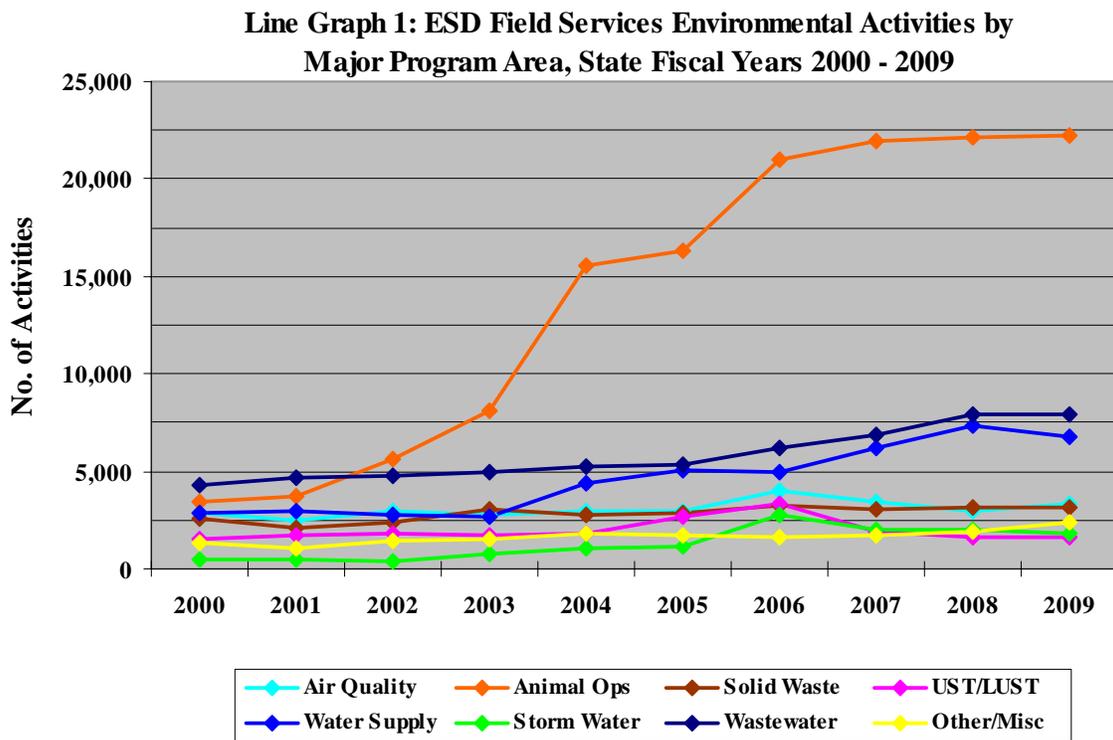
### **Follow-up and Implications**

There are approximately 5,500 confinement feeding operations in the state that are required to have manure management plans. Each facility is required to keep records of manure application and plan changes. They are also required to submit annual updates to the six regional DNR field offices. In addition, facilities must take soil fertility tests and update their complete manure management plan (taking into account the level of phosphorus in each intended application field) at least once every four years. The complete plans must be submitted to the DNR field office, too.

The DNR staffs in regional field offices are responsible for reviewing the manure management plans. But that is not all that field office staff do. The field offices provide local access for the public and increase the effectiveness of the DNR's regulatory work in outlying areas. In the relatively new animal feeding operations program field staff provide technical assistance to assure compliance with environmental regulations by inspecting facilities, ensuring manure applicators are certified and compliant, managing approximately 5,500 manure management plans each year, and providing compliance assistance to owners and operators who are trying to understand complex rules.

The scope and complexity of confinement program work increased disproportionately beginning with legislation in the late '90s. With this, public awareness of environmental issues also grew, resulting in a significant increase in local demand for education, compliance assistance and compliance assurance. To address these needs, animal feeding operations field staffing gradually increased to a high of 23 by SFY 2004. In SFY 2008, four staff people were shifted into a newly established open feedlots program. Then in the fall of 2009, as General Fund expenditures declined, confinement staffing was reduced again. This reduced staff numbers from 19 to 11.5. This reduction means that the DNR will not be able to maintain an adequate level of compliance and enforcement activity in confinements.

The growth of the workload in the confined animal feeding operations program compared to other program areas is shown in the graph below.



The decrease in staff will impact critical compliance work, possibly curtailing or discontinuing some activities. It is not clear how this will affect the investigation of complaints related to manure application on snow-covered or frozen ground. Certainly the DNR intends to investigate water quality violations and fish kills within the staffing limitations. The DNR will take enforcement actions where appropriate when a responsible party can be identified and documented.

However, it's not yet clear how staff reductions will ultimately affect the DNR's animal feeding operations program. The DNR expects to further reduce confinement staff activities based on the anticipated level of funding in the future.