University of Idaho
College of Agricultural and Life Sciences

CIS 1138

Dairy Ammonia Control Practices

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This bulletin is to assist dairy farmers *in understanding the requirements of the Idaho Department of Environmental Quality's "Rules for the Control of Ammonia from Dairy Farms" (IDAPA 58.01.01.760 - 764). This bulletin will be reviewed annually and revised if necessary to reflect any new information, including any changes to the rules.*

Background

The Independent Dairy Environmental Action League (IDEAL), on behalf of the Idaho Dairymen's Association (IDA) and the Idaho Conservation League (ICL), asked the Department of Environmental Quality (DEQ) to consider regulation of dairy farms based on adoption of threshold numbers of dairy cows.

The text of the rule (Appendix A) was developed by DEQ with a group of persons interested in its development. The group contained individuals from the DEQ, Idaho Attorney General's Office, Idaho State Department of Agriculture (ISDA), IDA, Milk Producers of Idaho, Northwest Dairy Producers, ICL, Amalgamated Sugar Company, University of Idaho, and concerned citizens. The group met regularly between April 2005 and January 2006. The resulting rule requires dairy farms with cows or animal units above specified threshold numbers to implement industry best management practices (BMPs) to control ammonia through a permit by rule. A permit by rule (PBR) is a process by which a facility that emits air pollutant(s) may register with DEQ in lieu of obtaining a site-specific air quality operating permit. A PBR is a simple and efficient alternative to an individual permit. In a PBR, requirements are spelled out in the rule and apply to all members of a particular industry.

On February 23, 2006, the Board of Environmental Quality adopted the rule as temporary, with an effective date of July 1, 2006. The rule appeared in the June 2006 issue of the Idaho Administrative Bulletin as a proposed rule, was adopted by the Board of Environmental Quality as a pending rule in October 2006, and was approved by the Idaho Legislature in January 2007. See a set of frequently asked questions prepared by the Idaho Department of Environmental Quality in Appendix B.

Whom does the rule affect?

The "Rules for the Control of Ammonia from Dairy Farms" (Appendix A) requires dairy farms that may emit more than 100 tons of ammonia per year from their facility to obtain a PBR. The annual 100-ton emission level is a threshold for requiring Permits to Construct for agricultural sources in Idaho. The threshold values (Table 1) were derived from manure excretion tables prepared by the American Society of Agricultural and Biological Engineers and the USDA – Natural Resources Conservation Service and were agreed upon by IDA and ICL. In addition to manure excretion, the IDA and ICL used their best professional judgment to account for differences in ammonia losses from various dairy housing types, manure storage systems, and land application practices.

The threshold values vary between the type of dairy housing system and the type of liquid manure application system employed on the dairy farm. Differences in threshold levels for drylot and freestall scrape dairy farms account for the relative amount of ammonia loss on the facility as well as during the application of manure and wastewater. Greater thresholds are allowed for dairy farms that export all of their manure and wastewater off the farm (drylot = 7,089 head, freestall scrape = 3,893 head). Lower thresholds are allowed for dairy farms that apply their wastewater with center pivot drop nozzles or drag-hose (ground level) application systems.

The lowest thresholds are used for openlot and freestall scrape dairy farms that apply wastewater with overhead pivot sprinklers or other conventional sprinkler systems. No differentiation is made between housing type and land application practices for solid manure. Freestall flush facilities with more than 2,293 head (1,638 AU) are subject to this rule regardless of the farm's land application practices.

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When do I have to comply with this rule?

The effective date of the rule is July 1, 2006.

If my dairy farm is over the threshold, what do I have to do?

There are two requirements of the rule: registration and inspection.

Each dairy farm that meets or exceeds the threshold (Table 1) must register within 15 days of the effective date of the rule (i.e., July 16, 2006). Dairy farms below the threshold levels that expand beyond the threshold must register within 15 days of their expansion. To register, dairy farmers must provide the following information to the Idaho Department of Environmental Quality Stationary Source program at 208-373-0502 and the Idaho Dairy Bureau at 208-332-8550.

- Name, address, location of dairy farm, and telephone number,
- Type of dairy farm and the number of cows or animal units (AU), and
- Description of ammonia control BMPs used to meet the twenty-seven (27) point requirement.

An initial qualifying inspection of each dairy farm will be completed within thirty (30) days of receipt of the registration information. Inspections will be made to ensure a total of 27 BMP points are implemented. Inspections will be made by personnel from the Idaho Department of Agriculture. Follow-up inspections will be conducted as part of ISDA's regular inspection program.

"Each dairy farm that meets or exceeds the threshold (Table 1) must register within 15 days."

What BMPs am I required to install or use?

The rule recognizes that dairy farms are unique and that no specific BMP is appropriate for all dairy farms. Therefore, the dairy farmer has a table of BMP options and must ensure at least 27 points worth of BMPs are being implemented.

During development of the rule, various manure treatment systems and handling practices were evaluated for their effectiveness in reducing ammonia emissions (Table 2). Many scientific studies, extension bulletins, NRCS handbooks, and EPA guidance documents were evaluated in preparing the professional judgment toward relative effectiveness in reducing ammonia and the allocation of points. An arbitrary point system, with a maximum of 20 points, was assigned to each practice. A practice receiving 20 points equates to a system or practice resulting in a major reduction in ammonia emissions—approximately 70%—for that specific process.

Each practice was rated on a year-round basis and as if all of the manure practically available for the practice was handled by the practice. Variations due to normal seasonal use of each practice were considered in the points awarded to each BMP. Variations due to seasonal practices (such as corral harrowing or direct land application of liquid manure) and expected weather conditions have been factored into these ratings. Points awarded to land application practices assume that the practice is utilized on all manure that is applied. Points are allowed to be pro-rated to reflect actual waste treatment or handling that is occurring on each farm.

Table 1. Animal Unit (AU) or mature cow thresholds to produce 100 ton NH_3/year.

Farm Type	Drylot	Free Stall/Scrape	Free Stall/Flush
	Animal Unit Threshold		
No land app	7,089	3,893	2,293
27% volatilization[1]	6,842	3,827	
80% volatilization[2]	6,397	3,700	
	Total Cow Threshold (Average weight of 1400 lbs)		
No land app	5,063	2,781	1,638
27% volatilization[1]	4,887	2,733	
80% volatilization[2]	4,569	2,643	

[1] *Assumes:* Expected level of N->NH_3 volatilization for: drop-hose or ground level liquid manure application

[2] *Assumes:* Expected level of N->NH_3 volatilization for: center pivot or other conventional sprinkler irrigation liquid manure application

Emissions related to the management of exported manure are also addressed in the rule. Dairy producers under the rule can "take credit" for the management of ammonia conservation practices that occur on farms (third parties) that receive their manure. For example, if a dairy exports all the vacuumed slurry (feces and urine) from a freestall dairy to a neighboring farm that injects the manure, a total 25 points would be awarded: 15 for "Direct Utilization of Collected Slurry" and 10 points for "Soil Injection – Slurry." The same points apply if the practice is used year-round, or the points can be pro-rated to reflect the percentage of the year used. In order to take credit for activities conducted by third parties, dairymen must keep records on the amount of exported material that left the farm and the BMP the third party intends to employ.

How many BMP points do I have to have?

Dairymen will have to develop an annual plan that will account for at least 27 points of BMP implementation (Table 2). The list of BMPs, also located at IDAPA 58.01.01.764, was developed to give the maximum amount of flexibility for producers to select the appropriate ammonia control practices for their farm. Producers should review the description of BMPs found in this bulletin as well as discuss their proposed plan with their nutrient management planner to ensure that the proposal is not contrary to provisions of their nutrient management plan.

What will inspectors look for?

Three methods will be used under the rule to monitor compliance with the rule: inspections, records, and a deviation log. Each dairy farm will be inspected annually as part of the existing wastewater management inspection conducted by

the ISDA. During annual inspections, the amount of ammonia control BMPs utilized will be compared to the registered control plan, and the implementation of BMPs will be assessed. The inspector will also review applicable records, such as manure export logs, to document that specific practices have occurred. Lastly, producers will be encouraged to keep a "Deviation Log." This log reports any equipment upsets and/or breakdowns that occur and cause a shutdown or interruption in the implementation of any continuous practice. Any repairs that are completed in a reasonable timeframe will prevent a non-compliance with this rule.

"Dairy farmers must ensure at least 27 points worth of BMPs are being implemented."

How do I calculate how many BMP points I have?

Dairymen who fall under this rule should review the list of accepted BMPs and note which practices they use throughout the year to manage and land apply the manure on their farm. The plan should reflect the "year-around" implementation of practices, rather than one plan for summer BMPs and another for winter BMPs. The three examples at right, using the same dairy farm, illustrate the amount of points awarded for different BMPs.

What if I only do a BMP for part of the year? Do I get full credit?

No, if the BMP can be conducted/implemented year-around but is not. The points would need to be pro-rated to reflect the number of months in which it will be used. This is the case in Example #3, where the amount of points were reduced by 33% to reflect that the collected slurry was exported for only 8 months of the year (8/12 = 0.67%). If the practice is seasonal in nature, like corral harrowing, the total number of points would be awarded because the season reduction was taken into account when the points were assigned.

How will this rule be reviewed and updated?

The DEQ, with the assistance of university, industry, environmental, and citizen groups, will review this rule annually. The annual reviews will focus on the compliance history of dairy farms and reviewing available research on the effectiveness of new or existing BMPs on ammonia reduction.

EXAMPLE DAIRY

EXAMPLE DAIRY

Sweet Cream Dairy is a 2,800 freestall facility that scrapes the manure into a collection pit. The manure solids are then separated using a screw press. Solids are windrowed and "composted" for bedding while the liquid is stored in the lagoon. Wastewater from the parlor and holding pen is separated using a solids settling basin and the liquid drains into the lagoon. Exercise pens for the lactating cows are harrowed daily, when weather permits. Lagoon wastewater is applied during the growing season using two center pivots, overhead sprinklers, and 4 wheel-lines. The dairy also cleans up "unauthorized" manure from around the barns, separators, and irrigation equipment weekly. The dairy works with its nutritionist to monitor excess nitrogen through weekly milk urea nitrogen (MUN) samples. No replacement heifers or calves are kept on the facility.

Example #1
Initial BMP point determination:

- Composting: 4 points
  Separated solids from screw press and the settling basin are "composted" or dried without supplemental carbon sources or using rapid composting methods
- Scrape Built Up Manure: 3 points
  Weekly clean-up of "unauthorized" manure from around the barns, separators, and irrigation equipment
- Corral Harrowing: 2 points
  Farm daily harrows exercise pens, when weather permits, and removes excess manure as necessary.
- Manage Dietary Protein: 2 points
  Farm works with a trained nutritionist to monitor ration for excess nitrogen through the review of milk urea nitrogen (MUN) samples
- **Total Points = 11**

Example #2

Sweet Cream Dairy understands it does not have enough points to meet the 27 points required. Reviewing their options with their nutrient management planner, the dairy farm considers directly composting the collected slurry from the freestall barn with imported mint tailings and straw.

BMP point determination for directly composting collected slurry:

- Direct Utilization of Collected Slurry: 10 points
  As an alternative to storing the slurry in the lagoon, the collected slurry is incorporated into compost
- Carbon:Nitrogen Ratio (C:N) Manipulation: 7.5 points
  Mint tailings and straw are used as carbon sources for the collected slurry. In addition to drying the slurry, the high carbon content helps to conserve ammonia (nitrogen) within the compost pile
- Previous points: 11
- **Total Points = 28.5**

Example #3

Rather than composting the collected slurry, Sweet Cream Dairy contracts with several neighboring farms (third party receivers) to receive their manure daily during 8 months of the year. Additionally, the dairy farm hires a local hauler to inject the manure on fields specified by his neighbors. During the remaining 4 months, the collected slurry is separated and liquids are stored in the lagoon.

BMP point determination for directly injecting collected slurry:

- Direct Utilization of Collected Slurry: 10 x .67 = 6.7 points
  As an alternative to storing the slurry in the lagoon during 8 months of the year (0.67 year), the scraped slurry is exported off the farm. Points are pro-rated to reflect 8-month implementation
- Soil Injection – Slurry: 15 points x 0.67 = 10.05
  Manure is injected into the soil at a depth of 2 inches or greater. Points are pro-rated to reflect 8-month implementation (0.67 year)
- Previous points: 11
- **Total Points = 27.75**

Summary

During the past five years, the dairy farm industry in Idaho experienced tremendous growth in numbers of animals as larger operations emerged on the rural landscape. This growth heightens competition for air resources as population growth in Idaho moves the urban/rural interface further out into the rural areas and closer to dairy farms.

Issues with dairy farm odor are increasingly contentious, and public interest in regulating emissions from dairy farms has intensified. Although this rule is not intended to control odor emissions, it will help reduce odor.

Ammonia emissions from any type of facility have a role in the formation of fine secondary aerosol particulates (PM2.5) as they interact with other compounds emitted by industrial and mobile sources in an airshed. These secondary particulates cause wintertime "smog" in areas like the Treasure and Cache Valleys and are a serious health risk for the elderly, asthma suffers, and others with respiratory illness. The exact chemical process by which ammonia influences secondary aerosol formation will vary across airsheds because the controlling parameters will vary.

The DEQ does regulate the emissions of ammonia from large industrial sources. The dairy farm industry is recognized as the sector with the highest ammonia emissions in Idaho. The DEQ believes the cooperation of all parties involved in negotiating this rule is a step in the right direction for controlling air pollution in Idaho. The rule will be re-visited by the negotiating parties on an annual basis to determine compliance issues and effectiveness in reducing ammonia emissions. As more scientific information emerges regarding ammonia emission factors, efforts to quantify emission reductions as a direct benefit of the rule will be more credible and provide for better decision-making.

Acronyms/Glossary

AU	Animal Units, mature cows
BMP	Best Management Practice
CID	Certified irrigation designer
DEQ	Department of Environmental Quality (Idaho state)
EPA	Environmental Protection Agency (federal)
HDPE	High density polyethylene
HEL	highly erodable land or fields with little or no ground cover
ICL	Idaho Conservation League
IDA	Idaho Dairymen's Association
IDAPA	58.01.01.760-76 Rules for the Control of Ammonia from Dairy Farms (Idaho)
IDEAL	Independent Dairy Environmental Action League
ISDA	Idaho State Department of Agriculture
LEPA	Low Energy /Pressure Application System
MUN	Milk urea nitrogen
NRAES	National Resource, Agriculture, and Engineering Service, an interdisciplinary, issue-oriented program sponsored by cooperative extension of fourteen member land-grant universities
NRCS	Natural Resources Conservation Service (federal)
ORP	Oxygen reduction potential
PBR	Permit by Rule: a process by which a facility that emits air pollutant(s) may register with DEQ in lieu of obtaining a site-specific air quality operating permit
PM 2.5	Fine particles are 2.5 micrometers in diameter and smaller and are also referred to as PM 2.5
PVC	Polyvinyl chloride
UD	Under development

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Table 2. Annual points awarded for ammonia control best management practices (BMPs) in Idaho dairies, effective July 1, 2006.

Ammonia Control Practices for Idaho Dairies

System	Component	Ammonia Control Effectiveness [1]			Compliance Method [3]
		Open Lot	Freestall Scrape	Freestall Flush	
Waste Storage and Treatment Systems	Synthetic Lagoon Cover	15	20	20	1
	Geotextile Covers	10	13	13	1
	Solids Separation	3	3	3	3, 4
	Composting	4	4	4	1
	Separate Slurry and Liquid Manure Basins	6	10	-	1
	In-House Separation	0	12	0	1
	Direct Utilization of Collected Slurry	6	10	-	1, 3, 4
	Direct Utilization of Parlor Wastewater	10	10	10	1
	Direct Utilization of Flush Water	8	0	13	3, 4
	Anaerobic Digester	-	-	-	-
	Anaerobic Lagoon	-	-	-	-
	Aerated Lagoon	10	12	15	2
	Sequencing-Batch Reactor	15	20	20	2
	Lagoon Nitrification/Denitrification Systems	15	20	20	2
	Fixed-Media Aeration Systems	15	20	20	2
General Practices	Vegetative or Wooded Buffers (established)	7	7	7	1
	Vegetative or Wooded Buffers (establishing)	2	2	2	1
	Alternatives to Copper Sulfate	-	-	-	-
Freestall Barns	Scrape Built-Up Manure	-	3	3	1
	Frequent Manure Removal	UD	UD	UD	-
	Tunnel Ventilation	-	-	-	-
	Tunnel Ventilation w/Biofilters	-	10	10	1
	Tunnel Ventilation w/Washing Wall	-	10	10	3, 4
Open Lots and Corrals	Rapid Manure Removal	4	2	2	1, 2
	Corral Harrowing	4	2	2	1
	Surface Ammendments	10	5	5	2
	In-Corral Composting / Stockpiling	4	2	2	1
	Summertime Deep Bedding	10	5	5	1
Animal Nutrition	Manage Dietary Protein	2	2	2	2
Composting Practices	Alum Incorporation	12	8	6	2
	Carbon:Nitrogen (C:N) Ratio Manipulation	10	7.5	5	2
	Composting with Windrows	-	-	-	-
	Composting Static Pile	6	4.5	3	1
	Forced Aeration Composting	10	7.5	5	1
	Forced Aeration Composting with Biofilter	12	8	6	1
Land Application [2]	Soil Injection - Slurry	10	15	7.5	2
	Incorporation of Manure within 24 hrs	10	10	10	2
	Incorporation of Manure within 48 hrs	5	5	5	2
	Nitrification of Lagoon Effluent	10	10	15	3, 4
	Low Energy/Pressure Application Systems	7	7	10	1
	Freshwater Dilution	5	8	8	1, 2
	Pivot Drag Hoses	8	8	10	1
	Subsurface Drip Irrigation	10	10	12	1

Notes:

1. The ammonia emission reduction effectiveness of each practice is rated numerically based on practical year-round implementation. Variations due to seasonal practices and expected weather conditions have been factored into these ratings. Not implementing a BMP when it is impractical to do so does not reduce the point value assigned to the BMP, nor does it constitute failure to perform the BMP. UD indicates that the practice is still under development.

2. Land application practices assume practice is conducted on all manure; points will be pro-rated to reflect actual waste treatment; points can be obtained on exported material with sufficient documentation.

3. Method used by inspector to determine compliance:

   1=Observation by inspector

   2=On-site recordkeeping required

   3, 4=Deviation reporting required. Equipment upsets and/or breakdowns shall be recorded in a deviation log, and if repaired in a reasonable timeframe does not constitute non-compliance with this rule.

Ammonia Control Best Management Practices (BMPs)

LIQUID MANURE STORAGE AND TREATMENT/WASTE STORAGE AND TREATMENT SYSTEMS

Synthetic Lagoon Cover

Definition: Impermeable lagoon cover constructed of flexible polyvinyl chloride (PVC) or high density polyethylene (HDPE). Creates an air and watertight seal over the manure surface. Requires a vent to release carbon dioxide and methane.

Points: Open Lot – 15 points; Freestall Scrape – 20 points; Freestall Flush – 20 points

In general, open lot receives fewer points because of the relative amount of manure that would potentially go into the liquid storage structure.

Compliance: Observation by inspector
Either present or not; recording and reporting not required. Inspector has discretion, if cover has a tear, to decide if the size of the tear is affecting practice; dairy will be required to repair to maintain BMP points.

Management Considerations: Cover will result in the accumulation of nitrogen within the lagoon. Manure samples should be taken to ensure that excess nitrogen is applied to crops at appropriate rates.

Vent and/or flare is required to release collected carbon dioxide and methane.

Loss of evaporation from surface may reduce storage capacity. Monitor lagoon liquid levels frequently and adjust land application plan if needed.

Geotextile Cover

Definition: Permeable cover constructed of non-woven synthetic felt. Constructed to provide complete coverage over liquid surface.

Points: Open Lot – 10 pts; Freestall Scrape – 13 pts; Freestall Flush – 13 pts

In general, open lot receives fewer points because the relative amount of liquid storage is less than with the freestall.

Compliance: Observation by inspector
Either present or not; neither recording, nor reporting are required. Inspector has discretion, if cover has a tear, to decide if tear is affecting practice; dairy must repair or lose BMP points.

Management Considerations: Cover will result in the accumulation of nitrogen within the lagoon. Manure samples should be taken to ensure that excess nitrogen is applied to crops.

Loss of evaporation from surface will reduce storage capacity. Monitor lagoon liquid levels frequently and adjust land application plan if needed.

Solids Separation

Definition: Gravity or mechanical separation system to remove manure solids from liquid waste stream. Separation pits should be cleaned on a regular basis, with holding times less than one month. Separated solids from mechanical systems should be removed from the separator on a regular basis, not to exceed three days.

Points: Open Lot – 3 points; Freestall Scrape – 3 points; Freestall Flush – 3 points

Compliance: Recordkeeping - deviation log. Maintain a one-time plan or explanation of system used and how cleaning is done. Maintain a deviation log to document noncompliance with plan.

Management Considerations: None

Composting

Definition: Stacking and drying of separated manure solids or corral manure. Practice may or may not meet the carbon-to-nitrogen ratio criteria specified in Natural Resources Conservation Service Standard #317.

Points: Open Lot – 4 points; Freestall Scrape – 4 points; Freestall Flush – 4 points

Compliance: Observation by inspector

Management Considerations: Composting is an aerobic biological process that results in the degradation of organic materials. For optimum composting conditions, the carbon to nitrogen ratio (C:N) should be between 30:1 to 40:1, and the moisture content should be between 50% to 60% moisture. No special microbes are required for sufficient composting.

Separate Slurry and Liquid Manure Basins

Definition: Construction and use of separate holding basins/lagoons to keep parlor wastewater and corral runoff away from concentrated slurry (manure and urine). Applicable systems include freestall scrape and open lot dairies that scrape their feeding alleys.

Points: Open Lot – 6 points; Freestall Scrape – 10 points; Freestall Flush – 0 points

In general, open lot receives fewer points because the relative amount of liquid storage is less than the freestall scrape.

Compliance: Observation by inspector

Management Considerations: None

In-House Separation

Definition: Specialized floor design allowing fecal material to remain in place while urine is removed.

Points: Open Lot – 0 points; Freestall Scrape – 12 points; Freestall Flush – 0 points

Compliance: Observation by inspector

Management Considerations: This practice utilizes floor designs, which will segregate urine and feces from collecting in the same area within the freestall barn. Ammonia emissions are reduced through minimizing contact time of urine and feces resulting in the conversion of urea to ammonia.

Direct Utilization of Collected Slurry

Definition: Year-round utilization or direct application of manure slurry instead of placing collected fresh material in storage basins - includes on-farm and export systems. Direct utilization means slurry wastewater is not sent to a wastewater storage basin with the exception of a collection pit. Seasonal systems (daily during the growing season) need to pro-rate points to reflect the number of months in which the process is conducted.

Points: Open Lot – 6 points; Freestall Scrape – 10 points; Freestall Flush – 0 points

Compliance: Observation by inspector when it is working; may need deviation log in the winter when it is not land applied.

Management Considerations: Daily application systems should consult a nutrient management planner or a certified crop advisor. Practice also includes facilities that incorporate collected slurry directly into compost windrows. Direct utilization systems should be planned with caution to avoid adverse impacts to surface and ground water quality.

Direct Utilization of Collected (Parlor) Wastewater

Definition: Utilization or direct application of parlor wastewater during the active growing season instead of placing collected fresh wastewater in storage basin - includes on-farm and export systems. Direct utilization means that parlor wastewater is not sent to a wastewater storage basin. Wastewater may be stored in a temporary storage (<5 days) until it is utilized and applied daily during the growing season as weather conditions allow.

Points: Open Lot – 10 points; Freestall Scrape – 10 points; Freestall Flush – 10 points

Compliance: Observation by inspector

Management Considerations: Daily application systems should consult a nutrient management planner or a certified crop advisor and consider mixing wastewater with irrigation water during application. Direct utilization systems should be planned with caution to avoid adverse impacts to surface and ground water quality.

Direct Utilization of Flush Waste

Definition: Utilization or direct application of flush water during the active growing season instead of placing collected flush water in storage basin. Applicable systems include freestall flush and open lot flush alley systems. Wastewater may be stored in a temporary storage (<5 days) until it is utilized and applied daily during the growing season as weather conditions allow.

Points: Open Lot – 8 points; Freestall Scrape – 0 points; Freestall Flush – 13 points

Compliance: Observation by inspector

Management Considerations: Daily application systems should consult a nutrient management planner or a certified crop advisor and consider mixing wastewater with irrigation water during

application. Direct utilization systems should be planned with caution to avoid adverse impacts to surface and ground water quality.

Anaerobic Digester

Definition: Treatment system that anaerobically digests organic matter from the manure and converts it into methane using bacteria. The methane is then collected and may be used to generate electricity or as an alternative to natural gas. Steady supply of manure is needed - typically no change to nutrient concentration without additional treatment - also effective in reducing volatile organic compounds, biological oxygen demand, and odor.

Points: Open Lot – 0 points; Freestall Scrape – 0 points; Freestall Flush – 0 points

Compliance: None

Management Considerations: No points assigned because anaerobic digestion converts organic-nitrogen to ammonia-nitrogen. However, digestion allows for additional treatment to be conducted at lower operational costs.

Anaerobic Lagoon

Definition: Biological earthen basins designed to decompose liquid manure in the absence of oxygen. System has a pH of 7.0 to 8.0, and sludge is designed to be removed every 5 years. Also effective in reducing volatile organic compounds, biological oxygen demand, and odor.

Points: Open Lot – 0 points; Freestall Scrape – 0 points; Freestall Flush – 0 points

No points assigned because this is not an ammonia control.

Compliance: None

Management Considerations: No points assigned because anaerobic digestion converts organic-nitrogen to ammonia-nitrogen. However, digestion allows for additional treatment to be conducted at lower operational costs.

Aerated Lagoon

Definition: Biological treatment basin designed to decompose liquid manure and nitrify ammonia in the presence of oxygen. System has a pH of 7.0 to 8.0, and sludge is designed to be removed every 5 years. System should utilize submerged micro-bubble system to reduce ammonia loss. If engineering guidelines are not specified by the designer, system should be operated to maintain a dissolved oxygen concentration greater than 1.5 mg/l and an oxygen-reduction-potential (ORP) greater than 50. Quarterly monitoring of inflow and outflow nitrogen species is required to track system performance. Also effective in reducing volatile organic compounds, biological oxygen demand, and odor.

Points: Open Lot – 10 points; Freestall Scrape – 12 points; Freestall Flush – 15 points

Point differences are based on the amount of material to be treated.

Compliance: Recordkeeping, reporting required - sensor for dissolved oxygen, oxygen-reduction-potential level; quarterly monitoring of the inflow/outflow

Management Considerations: Operational cost for lagoon aeration can be significant. Use of concrete, synthetic, or ISDA certified clay liner is required to minimize high nitrate losses to ground water.

Sequencing Batch Reactor

Definition: Single tank treatment system that allows for the sequencing of anaerobic, anoxic, and aerobic conditions within the tank through the scheduling of wastewater feeding and aeration. Successful systems have been documented to reduce 85% of total nitrogen for animal wastewater. Quarterly monitoring of inflow and outflow nitrogen species is required to track system performance. Also effective in reducing volatile organic compounds, biological oxygen demand, and odor.

Points: Open Lot – 15 points; Freestall Scrape – 20 points; Freestall Flush – 20 points

More points are given than for aerated lagoon because of higher efficiency and operational control.

Compliance: Recordkeeping and reporting required. Seasonal monitoring of inflow/outflow will be needed.

Management Considerations: Operational cost for SBR can be high, but system achieves an environmentally friendly reduction of nitrogen.

Lagoon Nitrification and Denitrification System

Definition: Engineered lagoon modification or stand-alone system designed and operated to convert wastewater ammonia to nitrate and then to nitrogen gas. Quarterly monitoring of inflow and outflow nitrogen species is required to track system performance. Also effective in

reducing volatile organic compounds, biological oxygen demand, and odor.

Points: Open Lot – 15 points; Freestall Scrape – 20 points; Freestall Flush – 20 points

Compliance: Recordkeeping and reporting required. Seasonal monitoring of inflow/outflow will be needed.

Management Considerations: Operational cost for lagoon system can be high, but it achieves an environmentally friendly reduction of nitrogen while potentially utilizing the existing earthen storage basin. Processing and storage facilities that contain nitrate-enriched wastewater present a risk to groundwater. Such facilities must be designed to reduce leaching potential and utilize ISDA-certified clay liners, synthetic liners, or concrete.

Fixed Media Aeration System

Definition: Stand-alone treatment system designed and operated to convert wastewater ammonia to nitrate. Systems utilize a media or substrate on which to propagate bacterial growth. Several systems have been shown to denitrify wastewater nitrate into nitrogen gas. Quarterly monitoring of inflow and outflow nitrogen species is required to track system performance. Also effective in reducing volatile organic compounds, biological oxygen demand, and odor.

Points: Open Lot – 15 points; Freestall Scrape – 20 points; Freestall Flush – 20 points

Compliance: Recordkeeping and reporting required. Seasonal monitoring of inflow/outflow will be needed.

Management Considerations: Operational cost for fixed media aeration systems are moderate compared to other aeration systems. Several systems have been shown to achieve an environmentally friendly reduction of nitrogen while reducing odor potential of treated wastewater. Processing and storage facilities that contain nitrate-enriched wastewater present a risk to groundwater. Such facilities must be designed to reduce leaching potential and utilize ISDA-certified clay liners, synthetic liners, or concrete.

GENERAL PRACTICES

Vegetative or Wooded Buffers – Established/Establishing

Definition: Mixture of hardwood and evergreen trees or shrubs control, capture, and mix higher elevated cleaner air with lower, dust, and odor-laden air from the ground surface. Also effective on odor and dust. Should be installed between production facility/lagoon and neighbors. (Established: At mature growth stage; Establishing: Planted but not at mature growth stage.)

Points:
(Established) Open Lot – 7 points; Freestall Scrape – 7 points; Freestall Flush – 7 points
(Establishing) Open Lot – 2 points; Freestall Scrape – 2 points; Freestall Flush – 2 points

Compliance: Observation

Management Considerations: NRCS Standard 380 Windbreak/Shelterbelt Management should be used as a guide for establishing.

Alternatives to Copper Sulfate

Definition: Use of approved alternatives to copper sulfate as a hoof treatment and preventative measure. No effect on ammonia; significant reduction in hydrogen sulfide.

Points: Open Lot – 0 points; Freestall Scrape – 0 points; Freestall Flush – 0 points

Compliance: None

Management Considerations: Effective alternatives to copper sulfate will reduce odors from dairy storage basins. No direct correlation to reductions in ammonia emission have been established.

FREESTALL BARNS

Scrape Built-Up Manure

Definition: Removal of built-up manure around the yard and manure handling system. Specific emphasis on ends of barns, around collection pits, mixing tanks, and manure loading areas. Also effective in reducing odors and fly production.

Points: Open Lot – 0 points; Freestall Scrape – 3 points; Freestall Flush – 3 points

Compliance: Observation by inspector

Management Considerations: None

Frequent Manure Removal

Definition: Practice is under evaluation at the University of Idaho and Texas A&M. No recommendation at this time.

Points: Under development

Compliance: Under development

Management Considerations: The effect of manure removal timing on ammonia emissions is currently showing mixed results.

Tunnel Ventilation

Definition: Engineered mechanical ventilation system draws fresh air into a barn through an open end wall by a slight negative pressure that is created by exhaust fans mounted at the opposite end wall.

Points: Open Lot – 0 points; Freestall Scrape – 0 points; Freestall Flush – 0 points

Compliance: None

Management Considerations: None

Tunnel Ventilation with Biofilter

Definition: Tunnel ventilation system that exhausts air into a biological biofilter for air treatment. Biofilter material should contain 50% shredded wood and 50% finished compost. System is also effective in reducing hydrogen sulfide, odor, and dust from barns.

Points: Open Lot – 0 points; Freestall Scrape – 10 points; Freestall Flush – 10 points

Compliance: Observation by inspector

Management Considerations: Although not currently demonstrated on a dairy facility, this practice has shown significant reductions in ammonia, hydrogen sulfide, and odor emissions from swine facilities.

Tunnel Ventilation with Washing Wall

Definition: Tunnel ventilation system that exhausts air into engineered washing wall for air treatment. Washing wall is designed to remove ammonia and dust from barn using a cascade of recycled water. Water may be acidified to increase ammonia removal. Systems are also effective in reducing odor and dust from barns.

Points: Open Lot – 0 points; Freestall Scrape – 10 points; Freestall Flush – 10 points

Compliance: Deviation log

Management Considerations: Although not currently demonstrated on a dairy facility, this practice has shown significant reductions in ammonia, dust, and odor emissions from swine facilities.

OPEN LOTS AND CORRALS

Rapid Manure Removal

Definition: Removal of winter time manure and corral bedding from open lot surface in spring or as quickly as practicable. Manure can then be stockpiled, composted, or exported off of the dairy.

Points: Open Lot – 4 points; Freestall Scrape – 2 points; Freestall Flush – 2 points

Compliance: Observation - if the inspector is present when removal is being done; Recordkeeping - if the inspector is not present when removal is being done.

Management Considerations: None

Corral Harrowing

Definition: Corral harrowing to distribute deposited manure, reshape corral surface, and/or remove manure from corral surface. Harrowing should be conducted no less than three times per week when weather conditions permit.

Points: Open Lot – 4 points; Freestall Scrape – 2 points; Freestall Flush – 2 points

Compliance: Observation by inspector

Management Considerations: None

Surface Amendments

Definition: Use of liquid and dry chemical products that will bind or chemically target the conversion of urea to ammonia gas. Product effectiveness and described use should be specified by manufacturer testing. Examples of product may include, but are not limited to: alum, magnesium sulfate, acids.

Points: Open Lot – 10 points; Freestall Scrape – 5 points; Freestall Flush – 5 points

Compliance: Recordkeeping – documented with receipts for amendment orders.

Management Considerations: This practice does not include biological amendments or bacterial stimulants. Producers should consult their nutrient management planner to review the effect of any product on agronomic performance.

In-Corral Composting/Stockpiling

Definition: Stockpiling and subsequent drying and potential decomposition of winter manure and bedding in-corral through summer and fall. Practice encourages the timely stacking and cleaning of corral surfaces. Practice cannot receive additional points through carbon-to-nitrogen ratio manipulation.

Points: Open Lot – 4 points; Freestall Scrape – 2 points; Freestall Flush – 2 points

Compliance: Observation by inspector

Management Considerations: None

Summertime Deep Bedding

Definition: Six inches of straw on an open corral surface as a one-time application. An approximate 40% reduction in ammonia emission is achieved.

Points: Open Lot – 10 points; Freestall Scrape – 5 points; Freestall Flush – 5 points

Compliance: Observation by inspector

Management Considerations: This practice allows a layer of straw to segregate urine and feces from collecting in the same area within the open lot. Feces deposited on straw will be allowed to dry and thus shed liquids if urinated upon. Ammonia emissions are reduced through minimizing contact time of urine and feces, resulting in the conversion of urea to ammonia.

Expect to manage fly production within lot.

ANIMAL NUTRITION

Manage Dietary Protein

Definition: With the assistance of a professional nutritionist, develop and follow a strategy to feed closer to National Research Council guidelines and production requirements incorporate phase feeding, or use appropriate amino acids or enzymes.

Points: Open Lot – 2 points; Freestall Scrape – 2 points; Freestall Flush – 2 points

Compliance: Recordkeeping – documented with milk urea nitrogen analysis and receipts from protein orders

Management Considerations: Producers should consult their nutritionist to evaluate the level of nitrogen in the rations fed on the farm. Initial studies suggest that crude protein in excess of 16% results in significant ammonia loss (50% increase if dietary crude is increased to 20%). Specific management practices are being developed.

COMPOSTING PRACTICES

Alum Incorporation

Definition: Regular incorporation of aluminum sulfate with fresh material to reduce ammonia volatilization. Dissolved phosphorus will also be reduced in the applied product.

Points: Open Lot – 12 points; Freestall Scrape – 8 points; Freestall Flush – 6 points

Compliance: Recordkeeping – documented with receipts

Management Considerations: This practice will increase the nitrogen content of the applied compost. Producers should consult their nutrient management planner to review the effect of any product on agronomic performance.

Carbon-to-Nitrogen Ratio Manipulation

Definition: Management and material selection to insure that the carbon-to-nitrogen ratio is greater than 35:1 in the finished compost material. Lower carbon-to-nitrogen ratios will encourage greater ammonia volatilization. Practice should not be allocated toward In-Corral Composting/Stockpiling.

Points: Open Lot – 10 points; Freestall Scrape – 7.5 points; Freestall Flush – 5 points

Compliance: Recordkeeping

Management Considerations: Composting is an aerobic biological process that results in the degradation of organic materials. For optimum composting conditions, the carbon to nitrogen ratio (C:N) should be between 30:1 to 40:1, and the moisture content should be between 50% to 60% moisture. Adding supplemental carbon sources will also increase porosity within the compost pile, allowing for better aeration within the pile. No special microbes are required for sufficient composting.

Composting with Windrows

Definition: Aerobic decomposition of manure or other organic materials placed in long rows. The windrows can be passive, actively turned, actively aerated windrows, or passively aerated windrows. Temperature is between 110° to 150°F, carbon-to-nitrogen ratio is 20:1 to 40:1, moisture is 40% to 60%, and pH is 5.5 to 9.0. For more information on static pile management, consult the On-Farm Composting Handbook, NRAES-54; call 607-255-7654 to order.

Points: Open Lot – 0 points; Freestall Scrape – 0 points; Freestall Flush – 0 points

Compliance: None

Management Considerations: Compost windrows should have a pile height between 3 and 10 feet. Windrows less than 3 feet will not have sufficient insulation to maintain temperatures over 100°F. Windrows with heights greater than 10 feet have been shown to have higher risks of spontaneous combustion.

Composting Static Piles

Definition: Engineered composting system through the aerobic decomposition of manure or other organic materials placed in long rows that are not turned/mixed but have aeration pipes installed to facilitate increased air transfer. Bulking agents such as shredded wood should be used to ensure pile porosity.

Points: Open Lot – 6 points; Freestall Scrape – 4.5 points; Freestall Flush – 3 points

Compliance: Observation by inspector

Management Considerations: Close management needs to be made when establishing a static compost pile to ensure that all materials are thoroughly mixed and meet recommended guidelines. For optimum composting conditions, the carbon to nitrogen ratio (C:N) should be between 30:1 to 40:1, and the moisture content should be between 50% to 60%. Adding supplemental carbon sources will also increase porosity within the compost pile allowing for better aeration within the pile. No special microbes are required for sufficient composting. For more information on static pile management, consult the On-Farm Composting Handbook, NRAES-54; call 607-255-7654 to order.

Forced Aeration Composting

Definition: Engineered composting method using long rows or containers where air is drawn or forced into the piles using mechanical blowers. These piles are not turned. Make sure air is dispersed evenly through the pile. Bulking agents such as shredded wood should be used to ensure pile porosity.

Points: Open Lot – 10 points; Freestall Scrape – 7.5 points; Freestall Flush – 5 points

Compliance: Observation by inspector

Management Considerations: Close management needs to be made when establishing a compost pile, prior to aeration, to ensure that materials are thoroughly mixed and meet recommended guidelines. Systems can be aerated by either pushing air into the compost pile or pulling air through the pile (see practice: Force Aeration Composting with Biofilter). Additionally, producers should consider temperature control aeration systems to reduce operational cost.

For optimum composting conditions, the carbon to nitrogen ratio (C:N) should be between 30:1 to 40:1, and the moisture content should be between 50% to 60%. Adding supplemental carbon sources will also increase porosity within the compost pile allowing for better aeration within the pile. No special microbes are required for sufficient composting. For more information on forced aeration, consult the On-Farm Composting Handbook, NRAES-54; call 607-255-7654 to order.

Forced Aeration Composting with Biofilter

Definition: Engineered composting method where air is drawn through the compost and discharged into a biofilter comprised of long rows or containers of carbon material. These piles are not turned. Bulking agents such as shredded wood should be used to ensure pile porosity.

Points: Open Lot – 12 points; Freestall Scrape – 8 points; Freestall Flush – 6 points

Compliance: Observation

Management Considerations: This specialized method of forced aeration composting pulls air through a compost pile and discharges air into a biofilter. The biofilter is comprised of half compost and half shredded wood by volume and a sprinkler system to maintain between 40% to 50% moisture within the biofilter. This practice works through filtering volatile compounds and ammonia and then

allowing aerobic microorganisms to degrade the compounds.

Close management needs to be made when establishing a compost pile, prior to aeration, to ensure that materials are thoroughly mixed and meet recommended guidelines. Producers should consider temperature control aeration systems to reduce operational cost.

For optimum composting conditions, the carbon to nitrogen ratio (C:N) should be between 30:1 to 40:1, and the moisture content should be between 50% to 60%. Adding supplemental carbon sources will also increase porosity within the compost pile allowing for better aeration within the pile. No special microbes are required for sufficient composting. For more information on forced aeration, consult the On-Farm Composting Handbook, NRAES-54; call 607-255-7654 to order.

LAND APPLICATION PRACTICES

Soil Injection – Slurry

Definition: Placement of manure slurry (manure of 8% to 15% solids) or separated solids beneath the soil surface with a minimum of mixing or stirring of the soil. Rate of slurry is not to exceed the nutrient management plan recommendation for the actively growing crop.

Points: Open Lot – 10 points; Freestall Scrape – 15 points; Freestall Flush – 7.5 points

Compliance: Recordkeeping

Management Considerations: Injection of slurry or separated solids will reduce ammonia emissions, odor, and the potential for flies. The nitrogen value of the slurry will be 15% to 40% greater than if the manure was not incorporated. Producers should consult their nutrient management planner to review the effect of decreased ammonia loss on agronomic performance. Conservation of nitrogen may result in ground water contamination if not properly accounted for in farm's nutrient management plan.

Incorporation of Manure within 24 Hours

Definition: Tilling of field surface following liquid or solid manure application within 24 hours from the time the application of the manure begins. Also effective in reducing hydrogen sulfide emissions and fly propagation.

Points: Open Lot – 10 points; Freestall Scrape – 10 points; Freestall Flush – 10 points

Compliance: Recordkeeping – documented twice: application and incorporation dates

Management Considerations: Incorporation of manure will reduce ammonia emissions, odor, and the potential for flies. The nitrogen value of the slurry will be 5% to 20% greater than if the manure was not incorporated. Producers should consult their nutrient management planner to review the effect of decreased ammonia loss on agronomic performance.

Incorporation of Manure within 48 Hours

Definition: Tilling of field surface following liquid or solid manure application within 48 hours from the time the application of the manure begins. Also effective in reducing hydrogen sulfide emissions and fly propagation.

Points: Open Lot – 5 points; Freestall Scrape – 5 points; Freestall Flush – 5 points

Compliance: Recordkeeping – documented twice: application and incorporation dates

Management Considerations: Incorporation of manure will reduce ammonia emissions, odor, and the potential for flies. The nitrogen value of the slurry will be 5% to 12% greater than if the manure was not incorporated. Producers should consult their nutrient management planner to review the effect of decreased ammonia loss on agronomic performance.

Nitrification of Lagoon Effluent

Definition: Use of an engineered aeration system, typically fixed media, to convert stored wastewater ammonia to nitrate prior to irrigation. Also effective in reducing volatile organic compounds, biological oxygen demand, and odor during application.

Points: Open Lot – 10 points; Freestall Scrape – 10 points; Freestall Flush – 15 points

Compliance: Deviation log

Management Considerations: Similar to Fixed Media Aeration System, however, effluent is nitrified (ammonia converted to nitrate) prior to application. This practice will not prevent losses of ammonia that occur during storage, but will conserve the nitrogen that is typically

lost during and immediately following irrigation. Operational costs for fixed media aeration systems are moderate compared to other aeration systems. Several systems have been shown to achieve an environmentally friendly reduction of nitrogen while reducing odor potential of treated wastewater. Processing and storage facilities that contain nitrate enriched wastewater present a risk to groundwater. Such facilities must be designed to reduce leaching potential and utilize ISDA-certified clay liners, synthetic liners, or concrete.

Low Energy /Pressure Application Systems (LEPA)

Definition: Center pivot and linear-move irrigation strategy that applies liquids at low pressures using drop nozzles. Larger droplets result in lower emissions but may cause infiltration problems on some soils. Designed systems and sprinkler packages should not exceed 35 psi. Low-pressure overhead sprinklers and wheel lines do not qualify as LEPA technologies. Also effective on hydrogen sulfide and odor.

Points: Open Lot – 7 points; Freestall Scrape – 7 points; Freestall Flush – 10 points

Compliance: Observation

Management Considerations: Producers should consult with a certified irrigation designer (CID) and nutrient management planner before converting non-LEPA pivots and linear move systems. Practice is not recommended on highly erodable land (HEL) or soils with lower water intake levels.

Freshwater Dilution

Definition: Dilute irrigated wastewater by a minimum of 50% (1:1 ratio waste to fresh water) during all irrigation events. Dilutions can be made in approved mixing pond or chemigation systems.

Points: Open Lot – 5 points; Freestall Scrape – 8 points; Freestall Flush – 8 points

Compliance: Observation by inspector or recordkeeping: Determined by system design

Management Considerations: Regardless of dilution rate, producers still need to take precautions when applying wastewater to crops close to harvest, especially those that will be used for direct human consumption.

Pivot Drag Hoses

Definition: Low pressure application method that allows the liquid to be applied on the soil surface directly in the row. This method decreases the amount of liquid lost to wind drift and decreases the energy costs associated with pumping enough liquid to maintain the high pressures required for the impact heads. Systems should use pressure regulators or ball valves to regulate flow from drag hoses. Also effective on hydrogen sulfide and odor.

Points: Open Lot – 8 points; Freestall Scrape – 8 points; Freestall Flush – 10 points

Compliance: Observation by inspector

Management Considerations: Pressure regulators or valves should be used on each drop to manage flow rates from the drag hose. Producers should consult with a certified irrigation designer (CID) and nutrient management planner before converting non-drag hose pivots and linear move systems. Practice is not recommended on highly erodable land (HEL) or fields with little or no ground cover.

Subsurface Drip Irrigation

Definition: Specialized irrigation method that allows for precise applications of liquid to the root zone of the plant. System requires specialized filtering system to handle wastewater solids. Specialized wastewater approved drip lines should be used to prevent clogging. Also effective on hydrogen sulfide and odor.

Points: Open Lot – 10 points; Freestall Scrape – 10 points; Freestall Flush – 12 points

Compliance: Observation by inspector

Management Considerations: In addition to using wastewater approved drip lines, special attention should be taken in the selection of filter media and selecting backwash frequencies. For more information on wastewater subsurface drip systems visit: www.oznet.ksu.edu/sdi/.

The nitrogen value of the wastewater will be 15% to 40% greater than if the manure was not incorporated. Producers should consult their nutrient management planner to review the effect of decreased ammonia loss on agronomic performance.

APPENDIX A

760. Rules for the Control of Ammonia From Dairy Farms

Approved: Feburary 23, 2006. Adopted: July 1, 2006.

The purpose of Sections 760 through 764 is to set forth the requirements for the control of ammonia through best management practices (BMPs) for certain size dairy farms licensed by the Idaho State Department of Agriculture to sell raw milk for human consumption. Compliance with these sections does not relieve the owner or operator of a dairy farm from the responsibility of complying with all other federal, state, and local applicable laws, regulations, and requirements, including, but not limited to, IDAPA 58.01.01.161, 650, and 651. Registration forms and guidance documents relating to these rules are located at the DEQ Web site.

761. General Applicability

The requirements of Sections 760 through 764 apply to the following size dairy farms:

SUMMARY: Animal Unit (AU) or mature cow threshold to produce 100 ton NH_3/year

Farm Type	Drylot	Free Stall/Scrape	Free Stall/Flush
	Animal Unit Threshold		
No land app	7,089	3,893	2,293
27% volatilization[1]	6,842	3,827	
80% volatilization[2]	6,397	3,700	
	Total Cow Threshold (Average weight of 1,400 lbs)		
No land app	5,063	2,781	1,638
27% volatilization[1]	4,887	2,733	
80% volatilization[2]	4,569	2,643	

[1] *Assumes:* Expected level of N->NH_3 volatilization for drop-hose or ground level liquid manure application

[2] *Assumes:* Expected level of N->NH_3 volatilization for center pivot or other conventional sprinkler irrigation liquid manure application

762. Permit By Rule

01. General Requirement. Owners and operators of dairy farms shall be deemed to have a permit by rule if they comply with all of the applicable provisions of Sections 760 through 764. Owners and operators of dairy farms subject to Sections 760 through 764 shall not operate without obtaining the applicable permit by rule within the timeframe specified.

02. Optional Permit by Rule. Nothing in Sections 760 through 764 shall preclude any owner or operator of a dairy farm from requesting and obtaining an air quality permit pursuant to Section 200, nor shall Sections 760 through 764 preclude an owner or operator of a dairy farm below the threshold size in Section 761 from complying with Sections 760 through 764 and thereby obtaining a permit by rule.

03. Exemption. If a dairy farm not subject to Sections 760 through 764 otherwise would become subject to those sections as a result of an emergency, the dairy farm shall notify the Director in writing within two (2) weeks of the emergency. The notification shall include an explanation of the emergency circumstances. The dairy farm shall be exempt from the requirements of Sections 760 through 764 as long as the consequences of the emergency continue (but in no case for more than one (1) year) unless for good cause the Director determines it is appropriate to limit, condition or revoke the exemption. For the purpose of this rule, "emergency" shall be defined as a serious situation or occurrence that happens unexpectedly and demands immediate action.

763. Registration For Permit By Rule

01. Registration Process. Any owner or operator of a new dairy farm subject to Sections 760 through 764, or an existing dairy farm that becomes subject to these sections due to change in size or type of operation, shall register prior to fifteen (15) days of triggering the threshold for which a permit is required.

02. Any owner or operator of an existing dairy farm subject to Sections 760 through 764 shall register within fifteen (15) days of the effective date of Sections 760 through 764.

03. Registration Information. The following information shall be provided by the registrant to the Department of Environmental Quality and the Department of Agriculture:

- **a.** Name, address, location of dairy farm, and telephone number.
- **b.** Information sufficient to establish that the dairy farm is of the size and type described in Section 761.
- **c.** Information describing what BMPs, as described in Section 764, are employed to total twenty-seven (27) points.

04. Within thirty (30) days of receipt of the registration information, the state of Idaho shall conduct a qualifying inspection to ensure the requisite point total of BMPs are employed.

764. Dairy Farm Best Management Practices

01. BMPs. Each dairy farm subject to Sections 760 through 764, or that otherwise obtains a permit by rule under these sections, shall employ BMPs for the control of ammonia to total twenty-seven (27) points. Points may be obtained through third party export with sufficient documentation. The following table* lists available BMPs and the associated point value. As new information becomes available or upon request, the Director may determine a practice not listed in the table constitutes a BMP and assign a point value.

*See Table 2, page 5.

APPENDIX B

Frequently Asked Questions and Answers from DEQ

Adapted from DEQ Factsheet on Docket No. 58-0101-0502

If a dairy farmer uses a certain BMP during six months of the year, because weather or seasonal conditions restricted implementation of that BMP year-round, will he receive the entire amount of points allocated to the BMP?

Yes. Seasonal or periodic implementation of BMPs has been factored into the points assigned to each BMP. State rules or adverse weather conditions prohibit implementation of certain BMPs during winter months. The points assigned to each BMP are scaled to represent the BMP's effectiveness for ammonia emission reduction on an annual basis. Inspectors will be able to determine whether the BMP has been implemented when allowed or appropriate.

If a dairy farmer implements a BMP on only half the waste generated, will the point value assigned to the BMP recognize this?

Yes. If a 10-point value BMP is implemented on only half the waste, the dairy farmer will receive 5 points for its use.

If a dairy farmer implements a BMP for six months of the year, and then chooses to implement another BMP in its place, how will the point value be determined for those BMPs?

The point value will be prorated for both the BMPs. For example, a 10-point year-round BMP that is implemented for six months will receive 5 points and, if a different 10-point year-round BMP is implemented the next six months, it, too, will receive 5 points.

If a dairy farmer opts to have a third party export its dairy waste off-site, will the third-party exporter become subject to these rules?

No. The rules do not give DEQ enforcement authority over third-party exporters. If it were determined that the third-party exporter had not implemented the BMP claimed by the dairy farmer, the dairy farmer would receive no points for that BMP.

If a dairy farmer who would not be subject to these rules based on size and type of dairy farm chooses to obtain a permit by rule under Section 762.02, will the dairy farm be required to comply with the permit by rule?

Yes. A dairy farmer who opts into the program and obtains a permit by rule will be subject to the requirements of the program. The dairy farmer can request termination of the permit by rule, which DEQ would agree to so long as the farm was in good standing. Termination of the permit by rule will not negate any violations, however, while subject to the program.

What is an example of an emergency as defined in Section 762.03?

An example of an emergency would be when a dairy farmer agrees to take a neighbor's cows because the neighbor's barn burned down.

How do equipment upsets and breakdowns affect the point total assigned to the BMP?

In the event of unforeseen equipment upsets and breakdowns, DEQ will exercise enforcement discretion. So long as corrective action is taken within a reasonable time, which would depend on specific circumstances, the event will not reduce the BMP point value.

How will the state ensure compliance?

Within 30 days of receiving a dairy farm's registration information, ISDA will conduct an inspection to ensure that the required number of BMPs are employed. ISDA will also provide compliance assistance if needed. If ISDA finds that BMPs are lacking, it may issue a warning letter.

Enforcement of the rule is DEQ's responsibility. Enforcement methods include filing a notice of violation or referring the case to the Attorney General's office for civil enforcement. In the event of unforeseen equipment upsets and breakdowns, DEQ will exercise enforcement discretion. So long as corrective action is taken within a reasonable time, which would depend on specific circumstances, the event will not reduce the BMP point value. In the event of an emergency, the farm could apply for and be granted an exemption for up to one year.

If a dairy farmer does not implement the required point total of BMPs, would the violation be considered a failure to obtain a permit by rule or a failure to comply with the permit by rule?

The violation would be a failure to comply with the permit by rule.

Who developed these rules?

The rules were developed by DEQ with a negotiating committee made up of representatives from the dairy industry, the environmental community, other state agencies, and other interested persons.

When did these rules take effect?

The effective date is July 1, 2006.

Where can I get a copy of the scientific basis for the 100 ton per year ammonia estimates?

The document is available on DEQ's Web site at www.deq.idaho.gov/rules/air/58_0101_0502_ ammonia_calculations.pdf.

Whom can I contact at DEQ for more information?

Contact Mike Simon, Stationary Source Program Manager, DEQ Air Quality Division, Boise, at 208-373-0502.

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