

## *Milkhouse Waste Management*

### WHY BE CONCERNED?

Milking center wastewater usually is considered a dairy sanitation problem. If not carefully managed, however, dairy wastewater can contaminate surface water or groundwater. Milkhouse wastewater may contain paper towels, detergent, milk solids, fats, manure, and other organic materials that reduce oxygen levels in water as they decompose. Fish and other aquatic life need this oxygen to live. If milk is frequently poured down the milkhouse drain, milk fats can cause premature aging of a wastewater septic system due to clogging of the drain field.

**The goal of Pennsylvania Farm•A•Syst is to help you protect groundwater and surface water, shared resources which are important to everyone.**

### HOW TO RANK GROUNDWATER AND SURFACE WATER PROTECTION USING THIS WORKSHEET

- You can select from a wide range of milkhouse wastewater conditions and practices that are related to potential groundwater or surface water contamination.
- You can rank your milkhouse wastewater conditions and practices according to how they might affect groundwater or surface water.
- Based on your overall ratings, you can determine which of your conditions or practices are reasonably safe and effective, and which might require modification to better protect groundwater and surface water.

### HOW TO COMPLETE THE WORKSHEET

Follow the directions as listed on page 2 of the worksheet. It should take 15 to 30 minutes to complete the evaluation and determine your milkhouse management ranking. Space is provided to rank up to three sites on your farmstead where milkhouse waste conditions or management could directly impact groundwater or surface water. If you have more than three sites, please use another worksheet. If you are unfamiliar with any of the terms used, refer to the glossary provided with this worksheet.

Information derived from Pennsylvania Farm•A•Syst worksheets is intended only to provide general information and recommendations to farmers regarding their own farmstead practices. It is not the intent of this educational program to keep records of individual results. However, they may be shared with others who will help you develop a resource management plan.

# WORKSHEET #5: MILKHOUSE WASTE MANAGEMENT

Use a pencil, in case you want to change an answer later. For each feature listed on the left that applies to your farmstead, read across to the right and circle the statement that most closely describes your situation. Leave blank any features that don't apply to your farmstead. Find the corresponding "rank number" (4,3,2,1) for each description you circled and enter that number in the blank under "your rank." If the conditions

and practices in any one description do not match your situation exactly, use an in-between score of one-half unit; for example, 2.5 or 3.5. Directions on overall scoring appear at the end of the worksheet. Allow 15 to 30 minutes to complete the worksheet and determine the level of groundwater and surface water protection you are providing through your milkhouse waste management practices.

## MILKHOUSE WASTE MANAGEMENT

	4 Best	3 Good	2 Fair	1 Poor	RANK (up to 3 sites)
<b>MANURE STORAGE—NO DISCHARGE <sup>a</sup></b>					<b>Site Identification</b> #1 #2 #3
<b>1. Wastewater discharge</b>	Wastewater delivered directly to adequately sized liquid manure storage. No uncontrolled discharge expected.	_____	_____	<i>Wastewater delivered to leaking manure storage.<sup>b</sup></i>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

<sup>a</sup> If using this practice, do not complete the rest of the worksheet. Put the ranking in this section in the "total" box at end of this chart.

<sup>b</sup> Italic type indicates a violation of the Pennsylvania Clean Streams Law, Pennsylvania Public Law 1987, No. 394. Check with Pennsylvania Department of Environmental Protection for more details.

					<b>Site Identification</b> #1 #2 #3
<b>PRETREATMENT (before discharge to soil absorption bed or field irrigation)</b>					
<b>2. Milk waste-water and milking parlor wastewater clean-up practices</b>	First pipeline rinse captured and added to barn manure. Waste milk never poured down drain. Manure and excess feed removed from parlor before wash-down.	Waste milk poured down drain 10% of the time. Manure and excess feed usually removed before wash-down.	Waste milk poured down drain 50% of the time. Manure and excess feed often washed down drain.	All waste milk poured down drain. Manure and excess feed frequently washed down drain.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>3. Storage/settling tank liner</b>	Concrete or plastic lined.	Clay lined.	Cracked or porous liner.	No liner to prevent seepage.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>4. Settling tank cleanout</b>	Based on size of tank and solids accumulation, tank cleaned as often as needed.	Tank cleaned every 6 months. No overflow of system.	Annual cleaning. No overflow of system.	Tank never cleaned, or only every few years. Danger of system overflow.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>5. Liquid storage period following settling</b>	6-9 months.	2-6 months.	Less than 1 week to 2 months.	No storage or settling. Wastewater discharged directly to soil as generated.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Site Identification #1. \_\_\_\_\_ #2. \_\_\_\_\_ #3. \_\_\_\_\_

	4 Best	3 Good	2 Fair	1 Poor	RANK (up to 3 wells)
<b>LOCATION OF DISCHARGE</b>					<b>Site Identification</b>
					<b>#1 #2 #3</b>
<b>6. Distance of absorption field or irrigation from drinking water well</b>	More than 150 feet downslope from well.	-----	Less than 150 feet downslope from well.	Less than 150 feet upslope from well.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>7. In relation to a stream, drainage-way, or ditch</b>	No stream located on property.	No discharge to stream or drainageway anywhere on property.	-----	<i>Direct discharge to stream or drainageway.<sup>a</sup></i>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>LAND APPLICATION METHODS</b>					<b>Site Identification</b>
					<b>#1 #2 #3</b>
<b>8. Surface application to dedicated vegetative areas</b>	Adequate land area for liquid and nutrients applied. Discharge according to designed application rate.	-----	Flow not uniform, or inadequate land for liquid or nutrient discharge. Concentrated runoff occurs.	Discharge pipe outlets in a haphazard way to a non-planned or non-maintained area.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	Planned dosing and resting of land, or rotating where wastewater is applied, allowing soil to dry out.	Planned dosing and resting of land followed most of the time, so the soil is usually not wet before next application.	Planned dosing and resting of land, but land is frequently wet by time of next application.	Planned dosing and resting system, but spreader distribution system no longer functioning or not maintained.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	Scheduled removal of vegetation to remove nutrients from soil.	Occasional removal of vegetation.	No vegetation removal.	No vegetation where discharge outlets.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>OR</b>					
<b>9. Below-ground absorption field</b>	-----	Previously existing, functioning leach field. Management practices exclude ALL waste milk and solid material from reaching absorption field. Regular cleaning of settling tank.	Previously existing absorption field. No visible water on soil surface, which would indicate an overloaded or failing system. Tank not cleaned regularly or tank clogs occasionally.	Tank not cleaned. Water routinely comes to the soil surface, indicating failure of system. (System cannot legally be repaired; new application method should be found.) <sup>b</sup>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
(Not legal for use in new or repaired systems)					
<b>OR</b>					
<b>10. Holding tank in combination with surface application</b>	Wastewater (does not include manure) held in tank for 6-9 months. Pumped out and spread on field with liquid manure equipment or irrigated.	Wastewater (does not include manure) held in tank for 2-6 months. Pumped out and spread on field with liquid manure equipment or irrigated.	Wastewater (does not include manure) held in tank for 1 week to 2 months. Pumped out and spread on field or irrigated.	Wastewater held in tank less than 1 week before being pumped out or irrigated.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	Applied at a rate determined by soil infiltration and nutrient utilization.	Applied at a rate determined by soil infiltration and nutrient utilization.	Wastewater applied frequently, regardless of weather or soil conditions.	Wastewater spread or irrigated regardless of weather or soil conditions.	
	No runoff.	Runoff is rare.	Occasional runoff.	Frequent runoff.	
<b>TOTAL</b>					<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Use this total to calculate overall performance ranking.					

<sup>a</sup> Italic type indicates a violation of the Pennsylvania Clean Streams Law, Pennsylvania Public Law 1987, No. 394. Check with the Pennsylvania Department of Environmental Protection for more details.

<sup>b</sup> The Pennsylvania Department of Agriculture will not approve the subsurface disposal of milking center wastewater for newly constructed milking centers or for the repair of malfunctioning existing systems.

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## HOW TO USE THESE RANKINGS

- Step 1.** Now that each feature has been ranked, add all these rankings together and put that value in the "Total" box at the end of the worksheet. Transfer that number to the box below.
- Step 2.** Divide the value in the "Total" box by the number of features ranked.
- Step 3.** Repeat for each additional site. Calculate the average ranking for all sites combined.

_____	divided by	_____	equals	_____
(total of rankings)		(# of features ranked)		(average ranking)*
*carry your answer out to one decimal place				

- Step 4.** Evaluate the overall management practices and site conditions.
- 3.6-4.0 = best management  
2.6-3.5 = good management  
1.6-2.5 = fair management  
1.0-1.5 = poor management
- This ranking indicates how milkhouse waste conditions and management practices as a whole might affect groundwater quality. This ranking should serve only as a general guide, not a precise diagnosis. Since

it represents an average of many individual rankings, it can mask any individual rankings (such as 1's and 2's) that should be of concern.

- Step 5.** Look over the rankings for individual features of each site:

**Best** (4's): best management according to current guidelines

**Good** (3's): provides reasonable groundwater protection

**Fair** (2's): inadequate protection in many situations

**Poor** (1's): poses a high risk of polluting groundwater

Regardless of the overall ranking, any individual rankings of "1" should receive immediate attention. Some problems can be taken care of right away; others could be major or costly projects, requiring careful planning before action is taken.

- Step 6.** Consider how farmstead management practices or site conditions could be modified to better protect groundwater and surface water. Contact the township or municipality Sewage Enforcement Officer, Conservation District, Penn State Cooperative Extension office, or the USDA Natural Resources Conservation Service for ideas, suggestions, or guidance.

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## GLOSSARY

**Below-ground absorption field:** A wastewater treatment system that applies effluent to the soil through a trench, bed, or pit, often preceded by a settling or septic tank.

**Dedicated vegetative area:** An area of vegetation designed to serve as a filter system for milkhouse wastewater. The more manure solids in the wastewater flow, the less effective the filter will be, as the solids overload the vegetation.

**Field application:** Application of wastewater to croplands and pastures by irrigation equipment or a liquid manure spreader.

**First rinse:** The small quantity of water used to remove milk from the pipeline or bulk tank before the washing procedure begins.

**Groundwater:** Water beneath the earth's surface that supplies wells and springs.

**Holding tank:** A tank that holds wastewater for a short period of time before wastewater is released to the absorption area.

**Liquid manure storage:** A structure to collect and hold the solid and liquid portion of manure until it can be applied

safely to land. May also contain barnyard runoff and milking center wastewater.

**Milking center:** Area of a dairy barn where milking, and milking system cleanup equipment, are located. Includes the milkhouse and parlor, if there is one.

**Milking center wastewater:** Mixture of water and chemicals used to clean and sanitize the milking system and bulk tank. Wastewater may also contain small amounts of animal feed and manure from clean-up or wash down procedures.

**Sediment or settling tank:** Slow flow container to provide time for materials to separate and to collect settled and floating solids from washwater. Similar or identical to a septic tank.

**Surface water:** Water at the earth's surface, such as ponds, lakes, streams, or ditches.

**Upslope/downslope:** Refers to the position of the well in relation to the direction of water flow.

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## ACKNOWLEDGMENTS

The Pennsylvania Farm•A•Syst package contains the following worksheets:

- Introduction
- Farmstead Map
- Preliminary Screening Quiz
- Worksheet #1 - Water Well Condition and Construction
- Worksheet #2 - Pesticide and Fertilizer Storage and Handling
- Worksheet #3 - Household Wastewater Treatment System
- Worksheet #4 - Barnyard Conditions and Management
- Worksheet #5 - Milkhouse Wastewater Management
- Worksheet #6 - Stream and Drainageway Management
- Overall Farmstead Ranking

Material for the Pennsylvania Farm•A•Syst package was developed by revising Farm•A•Syst material from the University of Wisconsin Cooperative Extension Service, University of Minnesota Extension Service, and the National Farmstead Assessment System Program. The format and style for the Pennsylvania package was based on the Ontario Environmental Farm Plan published by Ontario Farm Environmental Coalition, Ontario, Canada.

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