# Top five environmental trouble spots

*by Philip Brink*

**LAGOON STORAGE CAPACITY** must be enough at all times to hold the 25-year, 24-hour storm. Liners must be checked on a frequent basis, as well.

WHAT areas do dairies struggle with most to meet concentrated animal feeding operation (CAFO) environmental requirements? I visit dozens of dairies a year, and occasionally I am asked this question by owners and managers. They want to know whether the challenges on their farm are the same as the ones their industry peers are facing.

Following are the five most common areas I see where dairies are least likely to be fully compliant with the environmental regulations:

**#5 Not catching all runoff.** For CAFOs, water that comes into contact with manure, urine, or feedstuffs is generally considered wastewater. Exceptions may be made in different state regulations for some hay or straw storage areas, and some states have separate requirements for large compost areas. But generally speaking, runoff and process-generated wastewater from the production area must be caught in an approved holding structure and directly applied on a crop at an agronomic rate.

Among the dairies I have worked with, uncovered feed storage areas and manure/composting areas are least likely to have complete runoff containment. That can be a problem if uncontrolled runoff from these areas enters surface waters. At that point, it may be considered a pollutant discharge, and you may be subject to enforcement action.

**Bottom line:** Make sure that every part of the dairy where manure, urine, or feedstuffs (and their by-products) are present drains to an approved wastewater holding structure.

**#4 Inadequate documentation of lagoon liner seepage rate.** Wastewater lagoons, or ponds, must be "lined" to meet a certain allowable seepage rate. The liner may be composed of clay, synthetic materials, or existing soils, but most states require that the seepage rate of each pond liner be tested and certified as being compliant within the allowable limits. Some states, such as Kansas, may "grandfather" old wastewater ponds but still require that all new or expanded ponds demonstrate liner seepage rate compliance.

While there are still some dairies in the CAFO category that have not tested any of their pond liners, most have and are in compliance or working toward it. But there is a second, related issue that is more likely to be overlooked: proving liner compliance for short-term and intermittent holding ponds, including solid settling basins. Colorado, for instance, requires that any structure which holds wastewater for more than 48 hours must be lined just like a wastewater pond. At some dairies, this includes solid settling basins, shallow depressions, even low spots in conveyance ditches.

Most dairies operators don't think of these structures as wastewater storage devices, so they don't get them tested. This can be an issue if the regulatory agency inspects the operation, and upon finding inadequate liner compliance documentation, issues a compliance advisory (or worse). Since testing a lagoon liner takes time, and lining a lagoon is usually the most expensive component of pond construction, you do not want to be put into a position of racing to meet a deadline, as this often drives costs even higher.

**Bottom line:** Know your state's liner requirements for holding structures and conveyance ditches, and make sure your operation is compliant with them.

**#3 Not enough lagoon storage capacity.** A pollutant discharge permit from the state or EPA gives your operation the right to discharge wastewater as long as the following conditions are met: (1) a precipitation event causes the discharge, (2) at the time the storm began, the dairy's holding pond(s) had capacity available to hold the design storm runoff, and (3) certain best management practices are followed.

Whether the "design storm" is the 25-year, 24-hour storm or some other precipitation amount, ponds must be maintained to hold the runoff volume from the storm. Wastewater inflows (from the milking barn, water tanks, small runoff events) and accumulated solids reduce a pond's available capacity. For facilities that have minimal excess storage capacity to begin with, this is a concern. If liquids and/or solids accumulate to a depth where the design storm runoff can no longer be held, that dairy becomes out of compliance with its permit until the necessary capacity is restored.

In other words, a dairy may have engineering documentation that proves its holding ponds are large enough to retain the design storm runoff, but unless those ponds are maintained (dewatered and cleaned of solids as needed), the capacity may not be there when the design storm event occurs. A discharge under these circumstances would not be covered by a discharge permit and could be subject to enforcement action.

**Bottom line:** Know how much volume each wastewater pond must have available to hold its share of runoff from the design storm event, and keep ponds sufficiently emptied to hold the required amount.

**#2 Lack of a nutrient management plan.** Whether it is called a pollution prevention plan (PPP), nutrient management plan (NMP), or something else, the concept of managing manure and wastewater in an environmentally sound manner has been around for many years. Nearly every dairy I have worked with has some kind of nutrient management plan. However, in some cases, the "plan" consists of an operator's statement that goes something like "we apply 20 tons of manure per acre on our corn ground and dewater our lagoon to that field over there."

We have tested soils from fields that have been managed according to "rule of thumb" application rates such as the one described above and found total nitrogen levels in the top foot of soil in excess of 300 pounds per acre.

This example underscores the importance of balancing manure and wastewater applications with the amount of nutrients needed by the crop on which it is being applied and with the amount of nitrogen (and in some cases, phosphorus) already in the soil. At the federal level, EPA has extended the deadline for completing nutrient management plans (NMPs), but some states already require nutrient management plans for animal feeding operations or soon will. And in some states, such as Colorado, a CAFO needs to be following some elements of an NMP even if it doesn't have a pollutant discharge permit.

**Bottom line:** Develop and implement a nutrient management plan that complies with your state's NMP requirements.

**#1 Incomplete records.** Most dairy operators are not especially surprised to learn that record-keeping is the most common type of compliance deficiency. Keeping records may be as much fun as attending a PETA convention, but good records are necessary to prove your operation is complying with the regulations. Once you've invested the capital to achieve environmental compliance, think of record keeping as a kind of insurance on that capital. Some of the common types of records required are:

- *Precipitation*: Rain and snowfall can vary widely within a mile. Don't rely on the neighbor's rain gauge. Maintain two gauges on opposite ends of the farm, and keep a daily record of precipitation received.
- *Pond level measurements*: The only way to know if ponds have enough capacity available to hold the design storm is by keeping track of pond depth levels and knowing what level in each pond must be maintained to hold the runoff event.
- *Lagoon liner inspections*: Rodents, wildlife, erosion, and deep-rooted vegetation can each do their own kind of damage to pond liners. When checking and recording pond level measurements, take a quick look at the exposed area of each pond's liner, note any changes, and correct problems promptly.
- *Test results*: Manure, wastewater, and land application field soil nutrient levels should be recorded and agronomic balance calculations should be done for each field receiving manure or wastewater.
- *Applications*: Land applications of manure and wastewater (when, where, and how much as applied), as well as transfers of manure/wastewater to third parties.

**Bottom line:** Be familiar with the records required by your regulatory agency, and keep track. Make sure the record-keeping forms you are using are easy to understand since somebody besides you may be filling them out. Also, make sure the forms capture the information you need. Don't hesitate to ask your environmental consultant or the state regulatory agency for assistance in making sure you are collecting the right information.

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