

# Manure Management Practices to Reduce Water Pollution

If you allow manure to flow into surface waters, you cause pollution. It's that simple—and you have an obligation to take steps to remedy the situation.

Pollution exists when water quality is reduced and becomes unacceptable for designated (beneficial) uses. The Oregon Department of Environmental Quality has defined beneficial uses and the minimum water quality standards needed to protect them.

Federal pollution control regulations, contained in Public Laws 92-500 and 95-217, refer to these as "best management practices." Operations differ, so what is "best" for one may not be "best" for another. Apply practices only when they are best for your confined animal operation. If evaluation shows that no water pollution potential exists, no changes are necessary.

Most pollution results when manure comes in contact with runoff or surface water.

## Basic practices that keep manure away from runoff and surface water

*Don't deposit manure into surface waters!* There are several steps you can take when animals can get to a natural waterway or ditch (figure 1). Move the lot fence to keep animals from surface waters except at watering points. Move the waterway or ditch outside the lot. Pipe the open waterway or ditch underneath the lot.

Keep wastewater (from your milking parlor, for example) away from surface waters. Collect it and spread it on cropland or evaporate from a collection basin.

*Reduce polluted runoff volume.* There are a number of ways you can do this. They simply apply the general principle of *keeping clean water clean*.

Use curbs, dikes, ditches, or channels to intercept and reroute upslope runoff around the lot (figure 2). Rain and snow can still fall on animal lots and become polluted. You must collect, store (usually), and apply this water to your land properly. Use water bars to divert runoff flowing down a road-



Figure 1.—Livestock should not have unlimited access to a stream. Relocating fences or providing another source of water can prevent or minimize manure deposited directly into the stream.

way toward the lot. Intercept roof drainage with gutters that empty into clean water outlets.

Reduce the amount of cleaning, cooling, and other water (high-pressure systems will reduce cleaning water). Reuse water for flushing manure. Maintain waterers and water systems to avoid overflows, leaks, and water wastage by animals.

Roof and/or reduce lots and manure storage areas. Many open animal lots or stockpiled manure can be reduced in size. This reduces the volume of polluted runoff to be collected and managed.

Practices include roofing a greater portion or all of the manure storage and/or animal areas; improving surface drainage by grading; firming the lot surface with concrete, hog fuel, or other material to support more animals per area; and using stacking equipment to reduce the size of the manure storage area.

*Reduce movement of land-applied manure.* A number of commonly used practices will reduce the movement of manure with runoff. Consider those that reduce the volume of land runoff. You can use all soil-erosion control practices.





Figure 2.—A concrete holding area with a curb keeps the animal manure and rainwater from entering the adjacent stream. A curbed bridge allows the dairy operator to scrape the manure to a nearby storage area.

Incorporating manure during or immediately following land application is beneficial. It reduces the loss of (a) manure with runoff, (b) volatilized nitrogen, and (c) odor.

Use practices that encourage the movement of surface-applied liquids into the soil. Do not apply liquids faster than they can infiltrate into the soil. Apply liquids to match the infiltration rate and capacity of the soil. Adopt practices that improve soil structure. Install drain tile to lower the water table, which increases the frequency with which you can apply manure.

This will also improve the ability of the land to support manure-spreading equipment. Distribute manure on land as uniformly as possible, in amounts that match the needs of the crop, and at times and rates when the soil will absorb all of the liquids.

Apply manure on grassed waterways and next to surface waters during drier seasons, when rain and runoff are not likely to occur. However, if there is a ditch in a field where you want to apply manure during the winter, consider converting the ditch to buried pipe to stop runoff-transported pollutants from entering the water.

Maintain a separation distance between the stream and the location where you apply the manure. A vegetated buffer strip between the manured area and the stream will filter soil and manure particles from the runoff before it enters the water.

When you spread liquid manure on your land through a surface irrigation system, install a tailwater pump-back system. This will save water and nutrients in the manure and reduce the chance that surface water pollution will occur downstream.



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## Facilities to manage lot runoff, manure, and associated wastes

A number of factors affect the selection of equipment and facilities used to manage wastes. Some of these are: location, size, and type of operation; amount and availability of land to receive manure; climate, soils, and crops; existing equipment and facilities; and distance to surface waters. In many operations, commonly available equipment and simple earthen facilities are used to collect and manage runoff and manure.

When you plan, ask about the availability and use of various kinds of equipment and facilities. The Extension Service, Soil Conservation Service, private consultants, equipment suppliers and construction contractors are possible sources of information.

In summary, as an animal owner you are responsible for taking those steps that are reasonable and practical to keep manure out of surface waters.