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Silage Leachate

Use Caution and Protect the Environment

What is silage leachate?

Silage leachate is liquid that seeps from silage storage structures. Because it is typically very high in nutrients that can harm surface water and groundwater, silage leachate is a worse potential pollutant than manure or sewage. Controlling silage leachate and making sure that it does not enter groundwater or come into contact with surface water is extremely important.

Silage leachate results from the moisture that either drains out of forage material during or after the ensiling process or from external water that comes into contact with and flows through the silage—or from a combination of both of these sources.

Why is silage leachate important?

Silage leachate typically contains high concentrations of ammonia, sugars, and other nutrients that become food for algae and other plants in surface water. The nutrients in silage leachate can lead to significant algal growth (Figure 1).

Because aerobic organisms use dissolved oxygen in water to break down nutrients, nutrient-rich silage leachate can lead to depleted oxygen levels in water. (Silage leachate has a high *biological oxygen demand* or BOD.) So, whenever silage leachate enters surface water, it could create conditions that deplete the amount of dissolved oxygen in water and lead to fish kills. Even small amounts of silage leachate can severely impair aquatic life and result in fish kills.

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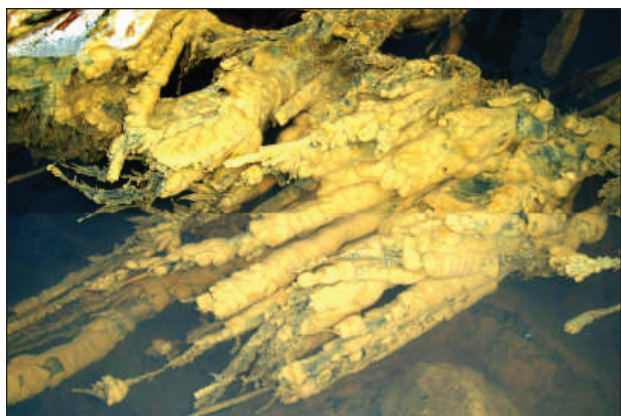


Figure 1. This whitish-gray algal mat formed as a result of silage leachate. *Photo courtesy of Jason Pentzer and the Washington State Department of Agriculture.*

What factors play a role in the amount of leachate that comes from silage storage?

The moisture level of the forage being ensiled plays a significant role in the amount of leachate that will be produced from the silage storage structure. Forages that are ensiled at higher moisture levels will lead to more silage leachate, though even forages harvested at recommended moisture levels are likely to result in some silage leachate. Properly storing and covering silage prevents rainwater from coming into contact with it and prevents the loss of nutrients in runoff water.

Is silage leachate regulated?

Movement of silage leachate into Indiana waters is considered a discharge of pollutants and is regulated by the Indiana Department of Environmental Management (IDEM). Discharge of silage leachate into surface waters could result in fines or may result in smaller operations being required to obtain a Confined Feeding Operation (CFO) permit.

What can you do?

Regardless of the size of an operation, silage leachate must be controlled to ensure it does not reach any groundwater or surface water.

Use proper silage management to help reduce silage leachate. You should:

- Harvest forages at proper moisture levels.
- Cover and store silage properly.
- Locate silage storage in well-drained locations that prevent water from pooling.
- Leave buffer areas between any silage storage structures and wells, ditches, and other surface water or drainage areas.

Focus on collecting and monitoring silage leachate. To do this:

- Use berms or other control structures to collect runoff from the silage storage area.
- If possible, divert silage leachate to manure storage structures.
- Locate leachate collection structures in areas and on soil types that will prevent any movement of leachate to groundwater.
- Monitor the drainage area to ensure the leachate is being collected properly.
- Consider the location of tile drains.
- Inspect the area regularly to make sure there are not any failures in the collection system.

Silage leachate needs to be monitored and controlled to protect the environment. Make sure that the proper steps are being taken to collect any silage leachate and to prevent it from moving into either surface water or groundwater.



Figure 2. Example of silage leachate discharge. *Photo courtesy of Jason Pentzer and the Washington State Department of Agriculture.*

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