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Groundwater quality after closing an earthen manure storage

February 17, 2021

Field technician from Alberta Agriculture and Forestry decommissioning groundwater wells at a

Field technician from Alberta Agriculture and Forestry decommissioning groundwater wells at a CFO site. Photo courtesy of the Government of Alberta.

Liquid livestock manure is commonly stored in earthen manure storages (EMS). When no longer in operation, these facilities present a risk to groundwater quality, particularly when EMS sites are not properly decommissioned.

In an article recently published in the *Journal of Environmental Quality*, researchers documented changes in shallow groundwater quality following closure of a dairy EMS in southern Alberta, Canada. This EMS was in operation for about 55 years with the dairy ceasing operation in 2015 and the EMS being emptied out without further decommissioning.

Groundwater samples were collected three times annually for five years prior to and for four years after the EMS closure and were analyzed for nitrate, ammonium, and chloride. The researchers found that in shallower wells, groundwater nitrate concentration increased to a maximum three years after closure and then decreased. However, the EMS was still a source of contamination as high nutrient concentrations were present in wells immediately next to the EMS four years after closure. Results suggest that additional decommissioning activities, other than simply emptying EMS contents, is required to minimize groundwater contamination.

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Kohn, J., Iwanyshyn, M., & Olson, BM. (2021). Groundwater nitrogen and chloride following closure of an earthen manure storage in southern Alberta. *Journal of Environmental Quality*. **https://doi.org/10.1002/jeq2.20187**

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