

Low Cost Biofilter Construction/ Evaluation

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Biofiltration is an air pollution control technology adapted from naturally occurring processes, which use microorganisms to oxidize volatile organic compounds. A barn biofilter consists of a bed of material with a large surface area, for example a mixture of coarse wood chips and fine materials, such as compost. As the barn air moves through the biofilter, and thus, the living ecosystem of bacteria and fungi that live on the biofilter's media surface, the low concentrations of organic compounds that create the odours are removed. Up to 90% of barn odour can be removed from the exhaust air by biofiltration.

Three biofilter projects, designed and constructed by Alberta Agriculture, are underway in Alberta:

1. A biofilter on an 1800 pig grower finisher barn near Bentley.
2. A biofilter on the new composting facility at the University of Alberta
3. A biofilter construction plan has been finished for a barn east of Edmonton, construction of several biofilter modules is planned for early this winter.

At each of these projects, odour concentration before and after filtration is being monitored. The data are being analyzed by the University of Alberta olfactometry lab. The expectation is that the results will lead to a better understanding of biofilter characteristics under Alberta conditions, design guideline development and a database of performance criteria that can be used to assess biofilter technology as applied to the minimum separation distance (MDS) method for siting new and expanding livestock operations.

Implications

The expected results from this project will be biofilter design and construction information for Alberta. When siting new or expanding operations and calculating the MDS, the effects of reducing MDS by using biofilters can be quantified.