Overview of Permeable Covers for Odor and Emission Control

Permeable Covers

Permeable covers are used to reduce odor and air pollutant emissions from manure storage structures.

Why Permeable Covers

Permeable covers typically provide a lower cost alternative to impermeable and/or permanent covers.

Permeable Covers Materials

- Straw
- Cornstalks
- LECA
- Mineral Granules
- Oils
- Ground Rubber
- Plastic Beads
- Geotextile

Cross Section of a Cover

Iowa State University Extension and Outreach

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**Straw Covers**

Blown Straw covers are the least costly permeable cover option with a cost of approximately $0.10 per square foot installed.

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**Straw Cover Life**

![Graph showing the life of straw covers over time](image)


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**LECA Cover**

LECA is a lightweight expanded clay aggregate material. It has been shown to provide a high degree of odor control.

**Ground Rubber**

Limited field demonstration, but has been highly effective and lasted more than 4 months.

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**Geotextile Cover**

BioCap™
Oil Covers

Several researchers have tested the use of vegetable and seed oils as a temporary manure cover material. Tend to break down quickly increasing methane and odor when they do.

Permeable vs. Impermeable

Impermeable covers provide a much higher level of odor and air emission control than permeable covers.

Permeable Covers

Lower cost permeable covers can be effectively used to control odor and air emissions from manure and waste storage structures.

Effectiveness

<table>
<thead>
<tr>
<th>Component</th>
<th>Reduction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH3</td>
<td>30-90%</td>
<td>With biocovers thicker cover generally more effective, with geotextiles sealing of edges control effectiveness</td>
</tr>
<tr>
<td>H2S</td>
<td>40-95%</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>40-90%</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter</td>
<td></td>
<td>Finely ground biocover materials can result in particulates</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>$5-$5</td>
<td>Biomaterial low, geotextiles and synthetics higher</td>
</tr>
</tbody>
</table>

For Further Information:

- If you are an educator and wish to have copies of PowerPoint files, contact Dan Andersen (dsa@iastate.edu).

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