Overview of Barriers

Air Management Practices Assessment Tool (AMPAT)

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Application

• Used to reduce dust and odor emission from a livestock building

Basic Operation

• A barrier or “windbreak wall” is placed in front of the fans.
• The barrier reduces the forward momentum of the airflow and causes dust to settle out.
• The ventilation air must then go up and over the wall to exit, causing it to mix in the wind and be diluted.
Barriers

- Smoke test illustrates the air movement from a building with a barrier and one without.

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Barriers

- Construction
  - Steel frame or treated wood
  - UV Resistant Tarp or treated plywood
- Strong enough to withstand wind
- Access to clean/mow

Barriers - Pros

- Relatively easy to implement
- Reduces dust emission
- Some designs may reduce odor transmission

Barriers - Cons

- More difficult to implement on non-tunnel ventilated barns.
- Gas emission reductions are limited to those adhering to dust.
- May require extra maintenance, especially in windy areas.
Effectiveness

<table>
<thead>
<tr>
<th>Component</th>
<th>Reduction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH₃</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>H₂S</td>
<td>0%</td>
<td>Dilution may reduce conc. close to buildings</td>
</tr>
<tr>
<td>Odor</td>
<td>25-90%</td>
<td>Estimated, depending on design</td>
</tr>
<tr>
<td>Particulate Matter</td>
<td>50-70%</td>
<td>Estimated</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>$5</td>
<td>Materials &amp; Construction</td>
</tr>
</tbody>
</table>

For Further Information:

- eXtension
- National Pork Board

- If you are an educator and wish to have copies of powerpoint files, contact Jay Harmon (jharmon@iastate.edu).