Overview of Anaerobic Digestion for Odor and Emission Control

Air Management Practices
Assessment Tool (AMPAT)

Project Team:
- Dan Andersen, Assistant Professor of Ag & Biosystems Engineering
- Jay Harmon, Prof of Ag & Biosystems Engineering
- Steve Hoff, Professor of Ag & Biosystems Engineering
- Angie Rock-Hinz, Manager, Iowa Manure Management Action Group

Anaerobic Digestion
Anaerobic digestion is used to stabilize liquid manure, reduce odors, and potential create biogas.

Why Anaerobic Digestion
Can reduce odors and even generate energy or heat.

Anaerobic Lagoon

Covered Anaerobic Digester

In-Ground Anaerobic Digester
Biogas Scrubbing and Pressurizing

Effectiveness

<table>
<thead>
<tr>
<th>Component</th>
<th>Reduction</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH3</td>
<td>50 to 50%</td>
<td>Less effective at ammonia free digesters. Higher ammonia levels can lead to losses during storage.</td>
</tr>
<tr>
<td>H2S</td>
<td>0 to 10%</td>
<td>Not generally reported.</td>
</tr>
<tr>
<td>Odor</td>
<td>50 to 85%</td>
<td>Generally has been reported to be effective.</td>
</tr>
<tr>
<td>Greenhouse Gases</td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>60%</td>
<td>Often not reported, but expected to be effective.</td>
</tr>
<tr>
<td>Cost</td>
<td>$5 to $500</td>
<td>Depends on system design and use for generated biogas.</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).

Daniel Andersen
Iowa State University
dsa@iastate.edu
515-294-4210