Introduction to Odor Control

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Overview
- Why Odor Control?
- Available Techniques
- Biofilter Construction

The Nose

Safety
- Corrosion
  - Hydrogen Sulfide
Safety
- Corrosion
  - Hydrogen Sulfide
- Explosion
  - Methane
- Health
  - Air borne disease

Odor Control Strategy
- Identify Sources of Odors
- Septage Receiving Area
- Screening and Grit Removal
- Equalization Tanks
- Processing – Decanting
- Filtrate
- Estimate Degree of Control Required based on proximity of downwind receptors
- Evaluate Options
- Select Appropriate Strategy
- Design and Construct

Odor Control Strategy
- Best Management Practices
  - Use quick-disconnect fittings
  - Avoid “Free Fall” of septage
  - Provide washdown facilities for spills
  - Ventilate tanks to odor control system
  - Everything inside!

Odor Control Strategy
- Best Management Practices

Odor Control Strategy
- Best Management Practices
• Odor Control Strategy
  o Best Management Practices

• Available Techniques
  o Remote Site
  o Odor counteractants (Misting)
  o Wet Scrubber
  o Activated Carbon
  o Biofilter

• Available Techniques
  o Misting (odor counteractants)
    • Sprayed into the atmosphere
    • React with odorous compounds
    • Encapsulate odorous compounds
    • Substantial cost of chemicals
    • 30 to 40% reduction of odors

• Odor Control Strategy
  o Best Management Practices
Available Techniques
- Odor Counteractants
- Wet Scrubber
- Activated Carbon Absorber
Available Techniques

Biofilters

- Passing odorous air through a media containing microbial populations
- Microbes use the odorous compounds as a food source
- Media must be kept moist and air must have good paths through media
- Requires long contact times and low velocities
- Systems come in a variety of designs and media configurations

<table>
<thead>
<tr>
<th>Technique</th>
<th>Cost Factors</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet Scrubber</td>
<td>Moderate Capital and operating costs</td>
<td>Effective and Reliable</td>
<td>High Chemical Use, and spent chemical to dispose</td>
</tr>
<tr>
<td>Activated Carbon Absorber</td>
<td>Cost depends on frequency of carbon use</td>
<td>Simple, few moving parts, effective</td>
<td>Only applicable for dilute streams</td>
</tr>
<tr>
<td>Biofilters</td>
<td>Low capital and O&amp;M costs</td>
<td>Simple, minimum O&amp;M</td>
<td>Design criteria not well established, large land area</td>
</tr>
<tr>
<td>Odor Counteractants</td>
<td>Cost dependent upon chemical usage</td>
<td>Low Capital cost</td>
<td>Limited odor removal efficiency</td>
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</tbody>
</table>

Biofilter Construction

![Diagram of a biofilter odor control]
Typical Design Criteria for Biofilters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Loading</td>
<td>2-10 cfm/sq ft</td>
</tr>
<tr>
<td>Detention Time</td>
<td>20-60 seconds</td>
</tr>
<tr>
<td>Media Depth</td>
<td>3-5 ft</td>
</tr>
<tr>
<td>Media pH</td>
<td>6-8</td>
</tr>
<tr>
<td>Pore Volume</td>
<td>40-50%</td>
</tr>
<tr>
<td>Moisture Content</td>
<td>50-60%</td>
</tr>
<tr>
<td>Media Constituents</td>
<td>Bark Mulch, hardwood chips, biosolids or leaf compost</td>
</tr>
<tr>
<td>Humidity of Inlet air</td>
<td>80-100%</td>
</tr>
<tr>
<td>Recommend air changes</td>
<td>6 volume changes/hour</td>
</tr>
</tbody>
</table>

Questions?

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